

# Energy in Ukraine

HEIKO PLEINES

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# LIST OF CONTENTS

<b>NOTE ON TRANSLITERATION</b>	<b>xi</b>
<b>UKRAINIAN AND RUSSIAN NAMES</b>	<b>xi</b>
<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>CHAPTER 1: GEOLOGY AND THE ENVIRONMENT</b> (author: Shirley Oliveira)	<b>5</b>
Geology	5
Precambrian	5
Mesozoic	6
Cenozoic	8
Mineral resources	9
Oil and gas	9
Dnieper-Donets basin	9
Carpathian region	10
Crimean-Black Sea-Caucasian region	11
Summary	12
Coal	13
Uranium	14
Environmental issues	14
Types of pollution	14
Air pollution	14
Water pollution	15
Soil pollution	16
Chernobyl	16
<b>CHAPTER 2: POLITICAL AND ECONOMICAL PROFILE</b>	<b>19</b>
Historical background	19
The Middle Ages and early modern age	19
The 19th century	19
The first half of the 20th century	20
Culture	21
Religion	21
Language	21
Regional differences	21
National movement and independence	22
The beginnings	22
The move for sovereignty	22
The move for independence	23
National movement and national state	23

Politics	24
The present political landscape	24
National parties	24
Communist parties	24
Pro-reform parties	25
Pro-Russian forces	25
Popular support	25
Recent political developments	25
Move to the political centre	26
The new constitution	26
Foreign policy	27
Relations with Russia	27
Relations with the West	28
The economy	29
Economic policy	29
Lack of reforms under Kravchuk	29
Attempts at reform under Kuchma	29
General economic development	30
Inflation finally under control	30
Economic crisis continues	32
Slow reforms in agriculture	32
Competition is still lacking in the	
Ukrainian economy	33
Foreign trade	34
Social problems	35
Corruption and organised crime	36
Business and corruption	36
Business and organised crime	37
Ukraine's regions	37
The Crimea	43
Political conflict	43
Economic problems	45
Dnipropetrovsk	46
The Donbas (Donetsk and Luhansk)	46
Odessa	47
Western Ukraine	48
Zakarpattia (Transcarpathia)	48
Future prospects	49
No serious external threats to Ukraine's security	49
Relations with Russia are likely to remain tense	49
Internal political stability not endangered	50
Power struggle over economic reforms will continue	50
Moderate economic recovery likely	51
A comparison with other post-socialist transition	
countries	51

### CHAPTER 3:      UKRAINIAN ENERGY – AN OVERVIEW      57

Energy balance and basic problems	57
State administration of the energy sector	59
Privatisation in the energy sector	59

Liberalisation of the energy sector	60
The present state administration of the energy sector	61
Coal industry	61
Oil and gas industry	62
Electricity market	62
Contact details	63
 <b>CHAPTER 4: FOREIGN INVESTMENT</b>	 <b>69</b>
Regulation	69
State guarantees for foreign investments	70
Foreign investments in the privatisation process	70
Companies with foreign capital	71
Founding a company	71
Taxation	73
Insurance	74
Lawsuits	75
Foreign investments based on licences, concessions or agreements on joint activities	75
Portfolio investments	76
Taxation	76
Transferring profits abroad	77
References	77
Financial and technical support	77
The World Bank programme	78
The International Monetary Fund	80
The European Union's Tacis programme	80
The European Bank for Reconstruction and Development	82
National government agencies and programmes	83
Trends in foreign investment	84
Investment opportunities in the energy sector	85
Coal	85
Oil and gas	86
Electricity	87
Portfolio investment	87
Contact details	88
 <b>CHAPTER 5: COAL</b>	 <b>97</b>
Production and profitability	97
Causes of the present crisis	97
Dimensions of the crisis	98
The reasons for state support	98
Plans for restructuring	101
The World Bank's proposal	101
The plan of the Ukrainian government	102
Implementation	103

Political conflict	104
Political lobby of the coal industry loses influence	104
Potential for political protests remains	105
Future prospects	106
 <b>CHAPTER 6: OIL AND GAS</b>	 <b>109</b>
Historical development	109
Petroleum industry	109
Natural gas industry	110
Dependence on oil and gas imports	111
Imports from Russia	112
Ukraine under economic and political pressure from Russia	112
Ukraine strengthens its position	113
Compromise in 1997	114
Imports from Turkmenistan	115
First conflict in 1992	116
New conflict in 1997	116
The search for alternative suppliers	117
Iran	117
Uzbekistan	118
Azerbaijan	118
Development of domestic resources by foreign investors	119
Dependence on foreign investment	119
Legislation on oil and gas extraction	119
Black Sea shelf	121
Licensing	121
Projects	122
Central and eastern Ukraine	122
Carpathian region	123
Company profiles	124
Ukrneft	124
Privatisation	125
Share market	126
Future prospects	126
Ukrgezprom	126
Chernomorneftegaz	127
Oil refineries	128
Privatisation	129
Russian interest	130
Galichina refinery	131
Kherson refinery	131
Kremenchug refinery	132
Linos refinery	132
Odessa refinery	134
Prikarpatya refinery	134
Gas wholesalers	135
United Energy Systems of Ukraine	137
Itera-Ukraine	138
Intergaz	138



<b>CHAPTER 7:</b>	<b>TRANSIT PIPELINES</b>	<b>141</b>
	(author: Andreas Heinrich)	
The Ukrainian section of the Eurasian pipeline network		141
Oil pipelines		141
MDOP and Eximnefteprodukt		141
The Druzhba pipeline		142
Ukrtransneft		143
Network expansion plans		143
Tariffs		144
Gas pipelines		145
Routes		145
Transit of Russian gas		146
Modernisation of the pipeline system		147
Gas storage facilities		147
Future prospects		147
Oil from the Caspian Sea		148
Export potential		148
Deposits		148
Legal status of the Caspian		148
US sanctions on Iran		150
Potential position on world markets		150
Country profiles		151
Azerbaijan		151
Kazakhstan		152
Possible export routes for Caspian oil from Azerbaijan		154
Baku-Novorossiisk		155
Baku-Georgian Black Sea ports		157
From Black Sea ports to world markets		158
Baku-Ceyhan		159
Possible export routes for oil from Kazakhstan		159
The Caspian Pipeline Consortium (CPC)		160
Exports via Azerbaijan		161
Swap deal with Iran		161
Exports to China		162
Future prospects for Caspian oil exports		162
Azerbaijan		162
Kazakhstan		164
Oil from the Gulf		164
Gas from Siberia		165
Gas from central Asia		167
Export potential		167
Possible export routes for gas from Turkmenistan		167
Turkmenistan-Iran-Turkey pipeline		167
Turkmenistan-Pakistan pipeline		168
Future prospects for central Asian gas exports		168
Ukraine's future role in the Eurasian pipeline network		169
Oil transit		169
Gas transit		170

<b>CHAPTER 8:</b>	<b>ELECTRICITY</b>	<b>173</b>
	Production and consumption	173
	Electric power stations	173
	Environmental concerns	174
	Present crisis	175
	International support	176
	Transmission	176
	Consumption	178
	Thermoelectric power stations	180
	Privatisation	180
	Finance	181
	Fuel supply	181
	Company profiles	182
	Dneproenergo	182
	Donbasenergo	182
	Tsentroenergo	183
	Zapadenergo	183
	Future prospects	184
	Nuclear power stations	185
	Ukraine's nuclear energy policy	185
	The Chernobyl accident	186
	Closing Chernobyl	187
	Remaining security risks	188
	Nuclear fuel cycle	189
	Uranium mining and processing	189
	Nuclear fuel production	190
	Nuclear waste disposal	190
	Future prospects	191
	Hydroelectric power stations	192
	Dnieper cascade	192
	Other hydroelectric power stations	194
	River Bug station	194
	Dneister cascade	194
	Power industry demand for equipment	194
 <b>CHAPTER 9:</b>	 <b>CONCLUSION</b>	 <b>197</b>

#### LIST OF TABLES

Table 1.1:	Palaeozoic and Mesozoic stratigraphy of the Dnieper-Donets rift basin	7
Table 1.2:	Ukraine's reserves and production of energy resources	13
Table 1.3:	Types and quantities of air pollutants in Ukraine, 1989	15
Table 1.4:	Principal water pollutants in Ukraine, 1989	15
Table 2.1:	Main economic indicators, 1992-97	31
Table 2.2:	Dollar exchange rate 1992-97, (six-month averages)	32

Table 2.3:	Ukraine's foreign trade, 1992-97	35
Table 2.4:	Average bribe payment for different 'favours'	36
Table 2.5:	Ukraine's regions – population, January 1997	38
Table 2.6:	Ukraine's regions – economic reforms, 1992-96	42
Table 2.7:	Ukraine's regions – industry, 1996	44
Table 2.8:	Ranking of political and economic reforms	52
Table 3.1:	Supply of energy resources to Ukraine's domestic market, 1990, 1995 and 2000	57
Table 3.2:	Energy consumption in Ukraine, 1990 and 1995	58
Table 4.1:	World Bank energy projects in Ukraine, 1995-98	79
Table 4.2:	Tacis programme in Ukraine – energy and environment, 1996-97	81
Table 4.3:	EBRD projects in the Ukrainian energy sector, 1995-98	83
Table 4.4:	Ukrainian energy companies with a market capitalisation of more than \$10m (as of 30 October 1997)	88
Table 5.1:	Ukraine's coal production, 1970-1997	98
Table 5.2:	Ukraine's coal mines, 1996	99
Table 6.1:	Ukraine's oil production, 1970-1997	110
Table 6.2:	Ukraine's natural gas production, 1970-1997	111
Table 6.3:	Sources of oil and gas consumed in Ukraine (by country, 1998 plan)	112
Table 6.4:	Ukrneft – key indicators, 1995-98	124
Table 6.5:	Ukraine's output of oil products, 1990-97	128
Table 6.6:	Ukraine's demand for refined products, 1990-2010	128
Table 6.7:	Ukraine's refineries – production, 1996	129
Table 6.8:	Ukraine's refineries – finance, 1996	130
Table 6.9:	Gas suppliers in Ukraine's domestic market, 1997	136
Table 7.1:	Eximnefteprodukt – key indicators, 1995-97	142
Table 7.2:	Druzhba, MDOP and Ukrtransneft – key indicators, 1996	143
Table 7.3:	Oil transit tariffs in the Eurasian region, 1996	145
Table 7.4:	Ukrainian gas transits, 1992-97	146
Table 7.5:	Net oil exports from the Caspian Sea region, 1990-2010	150
Table 7.6:	Major oil fields in Azerbaijan	153
Table 7.7:	Major oil fields in Kazakhstan	154
Table 7.8:	Net gas exports from central Asia, 1990-2010	167
Table 8.1:	Fuel use and air pollution by thermoelectric power stations, 1980-1995	174
Table 8.2:	Capacity of Ukraine's electric power stations, 1997	175
Table 8.3:	Ukraine's electricity production, 1970-1997	176
Table 8.4:	Electricity consumption in Ukraine by sector, 1995	178
Table 8.5:	Ukraine's electricity consumption, 1970-1997	179
Table 8.6:	Thermoelectric power stations in Ukraine, 1997	180
Table 8.7:	Aggregated financial results for Ukraine's thermal generating companies, 1995 and 1996	181

Table 8.8:	Ukraine's thermal generating companies – key indicators, 1997	183
Table 8.9:	Ukrainian and Russian thermal generating companies, 1996	184
Table 8.10:	Nuclear power stations in Ukraine, 1997	185
Table 8.11:	Number of incidents at Ukraine's nuclear power plants 1989-1996	189
Table 8.12:	Hydroelectric power stations in Ukraine, 1997	193



## NOTE ON transliteration

Ukrainian and Russian names have been transliterated from the Cyrillic alphabet according to the English standard transliteration system. Individuals' names are given in the version they prefer (or preferred) or which has become common in English usage (i.e. Nikolai Gogol instead of Mykola Hohol). Geographical names are given in the Ukrainian version, except that where there is a well established English version it has been chosen instead (i.e. Kiev instead of Kyiv, Crimea instead of Krym). Names of Ukrainian companies are given in Russian (with the Ukrainian version in brackets at first mention), since Russian is still the dominant language in the Ukrainian energy sector. Names of state institutions are given in English in order to clarify their function (with the official Ukrainian and the Russian version given in parentheses at first mention).

## UKRAINIAN AND RUSSIAN NAMES OF COMPANIES AND STATE INSTITUTIONS

Names of Ukrainian state institutions and (state) companies often consist of a number of abbreviations which describe the position, activities and/or location of the company or institution. For example, Derzhnaftohazprom (in Russian: Gosneftegazprom) contains the abbreviations for 'state', 'oil', 'gas' and 'industry'; accordingly, it is the name for the State Committee for Oil, Gas and Oil Refining. Ukrzakhidvugilliya (in Russian: Ukrzapadugol) contains the abbreviations for 'Ukraine', 'west' and 'coal'; accordingly, it is the name for the coal production association responsible for mines in western Ukraine. In Soviet times Russian was the language generally used; Ukrainian institutions, therefore, had and still have a Russian and a (now official) Ukrainian version of their name. The following list provides the most common abbreviations used in such names.

Ukrainian version	Russian version	English meaning
Ukr-	Ukr-	Ukrainian
derzh-	gos-	state
min-	min-	ministry
zakhid-	zapad-	west
tsentr-	tsentr-	centre
chernomor-	chornomor-	Black Sea
zarubizh-	zarubezh-	(responsible for the) abroad
-obl-	-obl-	oblast, regional
-kom-	-kom-	committee
-trans-	-trans-	transport
-exim-	-exim-	export-import
-vugillya	-ugol	coal
-nafta	-neft	oil
-haz	-gaz	gas
-energo	-energo	energy, electricity
-elektro	-elektro	electricity
-prom	-prom	industry
-atom	-atom	nuclear (power)
-gidro	-gidro	hydro
-peredacha	-peredacha	transmission

## EXECUTIVE SUMMARY

In Soviet times Ukraine was considered to be rich in energy resources. Following the break-up of the Soviet Union there are still considerable coal, oil and gas deposits in Ukraine, but coal deposits are found under unfavourable geological conditions. The exploration of oil and gas deposits has been neglected since the 1970s when the Soviet leadership began to concentrate on more attractive deposits in Siberia. Accordingly, independent Ukraine does not have enough economically exploitable energy resources to meet domestic demand.

That is why the country depends on Russian energy supplies. When Russia started to raise prices for energy supplies to world market levels after the break-up of the Soviet Union, Ukraine experienced a severe energy shortage which was an important reason for its bad economic performance. Moreover, Russia used the Ukrainian dependence on energy supplies to exercise political pressure and tried to keep Ukraine in its area of hegemony.

But despite all doubts Ukraine achieved the goal of political stability. With the 1996 constitution the power struggle between parliament and president was peacefully settled. A moderation of the Ukrainian nationalist stance helped to integrate the russophile eastern regions into the independent Ukrainian state. The separatist movement in the Crimea lost its explosive force, too. External political stability was finally ensured by the 1997 treaties with Russia and Nato.

When economic reforms started under the newly elected president, Leonid Kuchma, in late 1994, Ukraine achieved macroeconomic stability relatively quickly. Inflation was brought down from more than 10,000% in 1993 to 40% in 1996. This success helped Ukraine to attract the support of international financial organisations such as the International Monetary Fund (IMF) and the World Bank.

However, foreign investment in the energy sector, like foreign investment in Ukraine in general, is hampered by legal and bureaucratic obstacles. Complex regulations, the long tradition of state intervention in economic activities and widespread corruption make a good knowledge of the Ukrainian business environment an essential precondition for successful investment.

Modernising the energy sector has become one of the cornerstones of economic reform in Ukraine. An extensive World Bank programme was developed to promote structural reform in the coal sector. Under the programme unprofitable mines are to be closed and the remaining ones will be modernised with the help of western technology. The social consequences of the restructuring have led to political opposition to the programme, which is, therefore, likely to make slower progress than planned.

Whereas the coal sector is one of the least profitable sectors of the Ukrainian economy, the oil and gas sector is numbered among the most profitable. Since oil and gas prices in Ukraine have reached world market levels, the extraction of oil and gas



has become profitable again. Accordingly, a number of foreign companies are already active in the sector. Ukraine hopes to attract further investors from abroad for the exploration and exploitation of Black Sea offshore fields. With the help of these fields Ukraine hopes almost to double its oil and gas production by 2010. The British company Shell has announced that it plans to invest up to \$1.5bn in the Ukrainian oil and gas sector.

A further aspect which makes the Ukrainian oil and gas sector interesting for foreign investors is its central role in the Eurasian oil and gas transport network. All Russian gas supplies to Europe go through Ukraine. Though this will change when the Yamal pipeline starts to deliver gas through Belarus and Poland, bypassing Ukraine, gas transits through Ukraine are unlikely to fall dramatically, since Russia plans to increase total gas exports and will, therefore, still depend on Ukraine's gas transit capacities. That is why extensive plans for the modernisation of the Ukrainian gas transport network have been worked out.

Ukraine is also a main transit country for Russian oil exports. Oil pipelines to the Black Sea ports of Novorossiisk and Odessa as well as the transit pipeline to south-central Europe run through Ukrainian territory. To strengthen its role in oil transits Ukraine has started to build an oil terminal near Odessa for the import of oil from the Caspian Sea and the Middle East. This oil could then be transported to European customers after Ukraine has completed a pipeline connecting Odessa with the main oil export pipelines. Although some of these ambitious plans are unlikely to materialise, Ukraine has a good chance of becoming a transit country for Caspian oil. This would help Ukraine to lessen its dependence on Russian energy supplies and would also yield considerable income from transit fees. Since Caspian oil producers are desperately looking for export routes, some of them have already offered support for the construction of the necessary infrastructure in Ukraine.

Whereas the oil and gas sector attracts direct foreign investment, the power generation sector mainly offers opportunities for foreign equipment deliveries and portfolio investment. Reform in the Ukrainian electricity market started only in 1995/96 and liberalisation of the market still has some way to go. However, the main power stations (apart from the nuclear ones) and local power distributors have already been privatised. After electricity prices have been liberalised these companies will have the potential to make considerable profits which in turn can be used to finance modernisation. Western equipment suppliers can expect solvent customers, especially when power plant rehabilitation projects are backed up by loans from international financial organisations.

Despite the Chernobyl disaster, Ukraine has plans to increase the capacity of nuclear power plants, too. But western financial support for these projects is unlikely and hence the projects will probably not be realised. In Ukraine's nuclear energy sector western support concentrates on projects designed to tackle the consequences of the Chernobyl disaster. The relevant research, the construction of a new sarcophagus over the burnt down reactor and measures for the closure of the remaining blocs will be financed by the West. But since financial support is limited to the closure of Chernobyl, the share of nuclear power plants in Ukraine's total electricity production is likely to remain at the pre-sent level of about 45%.

Although foreign investments in Ukraine still face the typical post-Soviet obstacles, the Ukrainian energy sector offers some interesting prospects. If reforms in the energy sector make the desired progress, the sector may be able to lead Ukraine out of its present economic crisis. A lower degree of dependence on Russian energy supplies would also help Ukraine to profit from its geographical position and consequently to function as a main transit country for Russian (and perhaps Caspian) energy supplies to Europe.



## CHAPTER 1: GEOLOGY AND THE ENVIRONMENT<sup>1</sup>

Ukraine is located on the southern edge of the Eastern European Craton. It has an area of approximately 600,000 sq km with a population of some 51m. The country is bordered by Russia and Belarus to the east and north, by Poland, the Czech Republic, Slovakia, Hungary and Moldova to the west, and by the Black Sea and Azov Sea to the south. Most of Ukraine consists of plains (steppe, forest and marshland) with mountains only in the west (Carpathians) and extreme south (Crimea). The main rivers are the Dnieper and the Dniester.

This chapter aims to introduce the geology of Ukraine, linking it to the energy sector. The availability of oil, gas, coal and uranium deposits determines the development of energy policies. Therefore, a good understanding of the geology is vital for the estimation of reserve quantity and quality which will result in the correct planning of energy policies. It is also necessary to consider the environmental impact of these activities to safeguard the right of future generations to a clean environment.

### GEOLOGY

This part focuses on the geology of oil, gas, coal and uranium deposits. The periods and regions of interest are the Palaeozoic Ukrainian shield, the Mesozoic Dnieper-Donets region and Crimean-Black Sea-Caucasian region (so called, although the Caucasus are not within the territory of Ukraine), and the Cenozoic Carpathian region. The Ukrainian shield contains important reserves of uranium, whereas the Dnieper-Donets and Carpathian regions are mainly hydrocarbon zones. The former is also the most important coal producing area in Ukraine. In the Black Sea-Crimean-Caucasian region, despite some drilling and minor fields, little exploration has taken place.

#### Precambrian

This is the earliest geological era and in Ukraine it is represented by the Ukrainian shield and the Voronezh massif. They are part of the Baltic shield, the link between the craton (ancient continental crust) of north-eastern Europe and Laurentia which may have constituted part of a single supercontinent during much of the Late Archaean and Proterozoic. This craton has been further divided into the Fennoscandinavia and the Volgo-Uralia in the east and the Sarmatia segment in the

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<sup>1</sup> All figures for oil include condensate. Figures in tonnes need to be multiplied by a constant factor of 7.35 to be converted into barrels.

All figures for natural gas are for volumes at 20°C. Whereas most countries measure gas volumes at 15°C, Ukrainian statistics give volumes at 20°C. At 20°C, gas volumes are about 7% higher than at 15°C.

Ukraine employs the following system for hydrocarbon reserves: A – developed field reserves, B – ready for development, C1 – discovered and explored as per standard, C2 – discovered and explored as per partially standard. The western system of proven reserve assessment includes Ukrainian categories A and B in full and about half of category C1.

south. Both the Ukrainian shield in the south and the Voronezh massif in the north, belong to the Sarmatia segment and are separated by the Palaeozoic Dnieper-Donets Palaeorift which stretches from the vicinity of the Caspian Sea towards the west.

The Ukrainian shield occupies a vast area of the country and extends in an elongated strip from the north-west to the south-east as far as the Azov Sea. Its width ranges from 250km in the north-west to about 50km in the Azov area, and it has a total area of 200,000 sq km. The Voronezh massif is a crystalline massif with an evolution similar to that of the Ukrainian massif.

The evolution of the Ukrainian shield involved several phases of magmatism and metamorphism. According to Gorbatshev and Boganova (1993) the Archaean crust after its formation underwent metamorphism between 1.85bn and 1.80bn years ago, and was intruded by granites in Precambrian. There were several phases of magmatism involving regular changes in tectonic setting, composition and depth of formation of rocks resulting in three different magmatic associations: granitic, diorite-granitic and anorthosite-granitic corresponding to the S, I and A-granite types respectively. The chemistry of the granitoids of granitic association became increasingly rich in aluminium; that of the diorite-granitic association evolved towards an increase of alkalinity and aluminosity and that of the anorthosite-granitic association towards an increase of alkalinity. This evolution was interpreted by Sveshnikov et al. (1993) as indicating the deepening of the magmatic chambers. One of the most important structures controlling emplacement of the massif was a long north-eastern mantle-rooted lineament, whose existence has been found through geophysical exploration. The northern edge of the massif is limited by the latitudinal Ovruch trough which contains continental unmetamorphosed sedimentary and volcanic rocks dated at 1,650m years (U-Pb zircon age). An orogenic stage in the Riphean magmatism was confined mainly to aulacogens and the crust acquired rigidity to become a platform. The emplacement of the granites led to the formation of uranium ores.

### **Mesozoic**

This era is characterised in Ukraine by the Dnieper-Donets rift basin and Black Sea-Crimean-Caucasian. The evolution of both regions started in the Palaeozoic but the most relevant events occurred in the Mesozoic, and hence their inclusion in this era. The region could also be included in the Cenozoic section because of the Neogene orogeny.

The Dnieper-Donets province is about 800km in length and 70-130km in width. It is orientated on a NW-SE axis and is located in the northern margin of the Ukrainian shield. This is the most important oil, gas and coal producing area. The aulacogen is divided into the Dnieper-Donets basin and the Pripyat basin to the north-west. The two basins are separated by the Chernihiv-Bragin high. This separation places the Pripyat basin outside the border of Ukraine near Chernobyl and Chernihiv.

The Dnieper-Donets basin is an intracontinental rift basin, consisting of a central graben bounded by large displacement faults and monoclinical flanks dipping into the graben. Depth to basement in the basin is 4-6km on the highs and 12-17km in the deepest parts. The monoclinical flanks dip towards the centre of the basin at 1-2° and the dip increases towards the faults bordering the central graben.



The basin was first formed in the early Palaeozoic as a narrow graben and then uplifted, and rifting continued throughout the Devonian and Carboniferous. During the Carboniferous, the basin was downwarped. Deposition during the Late Devonian, Carboniferous and Early Permian was mainly confined to the graben area whereas later sediments were deposited in basins that extended beyond the graben. Sediments are mostly upper Palaeozoic and Mesozoic clastics and carbonates. However, there are two Upper Devonian salt units and a Permian salt unit. Overlying these are Cenozoic clastic sediments.

A summary of Palaeozoic and Mesozoic stratigraphy of the Dnieper-Donets rift basin is shown in Table 1.1.

**Table 1.1:  
Palaeozoic and Mesozoic stratigraphy of the Dnieper-Donets rift basin**

Period	Sub-period	Thickness (metres)	Lithology
Cretaceous	Upper, Middle, Lower		Sandy-clay, marly-chalk No deposition
Jurassic		< 800	Sand, clay, carbonate (Lower Jurassic: brown coal)
Triassic		450	Sand, clay
Permian	Lower		Sandstone, siltstone, shale, localised anhydrite
	Gzhelian	150-400	Gray shale interbedded with sandstone and minor limestone
	Bashkirian (Muscovian)	330-1,100	Gray sandstone, siltstones, shale, occasional limestone
Carboniferous	Namurian	80-250	Gray claystones interbedded with sandstone, siltstone and limestone
	Visean	380-1,000	Shale, coarse- and fine-grained sandstone, conglomerates
	Tournasian	170-260	Upper portion: carbonate, Lower portion: sandstone, siltstone, shale
Devonian	Upper	1,000-2,000	Limestone, dolomite, anhydrite, halite
	Middle	< 1,000	Sandstone, siltstone, shale

Sources: Stova et al. 1996; Gustavson Associates Inc 1992

The Crimean-Black Sea-Caucasian region consists of the southern regions of Ukraine, stretching on an east-west axis from just north of the Danube delta to the Black Sea depression, the northern part of the Crimea, the Sea of Azov and the Kuban

lowland. The whole region is a fragmented graben with an east-west axis and is part of the North Caucasus-Mangyshlak province, a structure that extends from the Black Sea to the Caspian. In Ukraine this area is over 600km in length and has an average width of 150km with some 38,000 sq km onshore and 52,000 sq km offshore. Most of the Ukrainian sector is located on the northern side of the Great Caucasus belt.

The region has been divided into five structural features. They are, from west to east, the Karkinitzky trough, the Crimea arch, the Indolo-Kuban basin, the Central Azov arch and the North Crimea trough. These structures were the result of the Hercynian and Alpine orogenies. The degree of structural deformation is highly variable across the region.

Large thicknesses of sediments were deposited in the Mesozoic. The Triassic consists of diverse clastic and carbonate shallow water sediments unevenly overlain by Jurassic conglomerates, sandstones, siltstones, shales and limestones. Jurassic deposits attain the greatest thicknesses, for example more than 4,000 metres in the Azov-Kuban deposited in what was the hingeline separating the Scythian plate from the Great Caucasus geosyncline. During the Lower Cretaceous a marine transgression spread across the area resulting in the deposition of mainly marine clastics with minor limestone and evaporites whereas Upper Cretaceous sediments are deepwater limestones and marls.

### **Cenozoic**

The main events of this era took place in the Carpathian region, which occupies an area of about 60,000 sq km in the centre and north-west of Ukraine. Its geology ranges from the Carpathian mountain chain in the west, extends from southern Romania into the Czech Republic, to gently dipping sediments in the east. It has been divided into four main structural elements:

- the Lviv Palaeozoic trough;
- the Precarpathian trough;
- the folded Carpathians;
- the Transcarpathian trough.

It is in the first two elements that most production of oil, gas and brown coal is found. The main Carpathian range is separated from the thrust plates that occur in front of or north-east of the mountains themselves. The Precarpathian trough refers to the subsided frontal troughs and foredeep of the eastern Carpathian mountains. The Nappe zone was thrust northwards and eastwards onto the Russian platform. The thrust sheets are divided into an inner zone, which is a zone of high-angle thrusts, a transitional belt between the nappes on the south and west, and an outer zone of normal or block faults and the gently folded platform.

The structural evolution of the Precarpathian depression started in the Carboniferous and continued until the end of the Pliocene. Therefore, the region is not only a Neogene foredeep formed in front of the Carpathian range during Alpine orogeny, but an older depression of Prealpine origin. The evolution of Neogene volcanism



occurred in the last stage of the regional Alpine history. During the volcanism magmas evolved from acidic explosions to basic lavas. Four main phases of volcanism are distinguished: Badenian, Sarmatian, Pannonian-Pliocene and Pliocene. Volcanics of the first and second phases (Novoselit and Dorobratov suites, respectively) are buried in molasse sediments of the Transcarpathian depression. Volcanics of the third and fourth phases (Huty and Budjor suites, respectively) form the Vihorlat-Huty ridge. Their lavas overlapped the youngest Pliocene molasse of the Transcarpathian depression. These suites are overlain by Neogene molasse sediments.

Palaeozoic rocks range in thickness from 500 metres to 2km. The Mesozoic consists of severely deformed sediments with a thickness of 10-11km. The sequence comprises Jurassic clays, sandstones and carbonates, Cretaceous clastics and platform carbonates and flysch. The inner zone of the Carpathian foredeep is filled with Cretaceous-Palaeogenic flysch and the Neogene molasse-sale sequence, with a total thickness of 2,300-6,500 metres. The outer zone contains a sequence (up to 4km thick) of Jurassic, Cretaceous and Neogene clastic sediments whereas Palaeozoic flysch is very thin or not present.

## MINERAL RESOURCES

### Oil and gas

#### *Dnieper-Donets basin*

The Dnieper-Donets basin contains more than 120 fields. The first discovery was reported in 1936 but significant discoveries were not made until the 1950s. Before the break-up of the Soviet Union more than 3,000 wells had been drilled. The largest oil field is Prilukskoye, which was discovered in 1959 and contains 80mt. Oil was found in Carboniferous sandstone reservoirs at 1,800 metres over a deeper Devonian salt structure. The largest gas field, Shebelynka, containing more than 500bn cu metres, was discovered in 1950. The gas was in a Permian sandstone reservoir at 1,500 metres depth and was deposited over an anticline. Many large gas fields found in the 1950s and 1960s are now considered exhausted. Fields in the north-western part of the rift tend to consist of oil and condensate, whereas those in the south-east contain mainly gas.

The principal hydrocarbon source rock is the black shale facies. It consists of marine shale, marls, and limestones containing type II kerogen deposited during the Upper Devonian-Tournaisian interval. Even though these are primarily oil source rocks, the Dnieper-Donets basin is mostly gas-rich as a result of overmaturity. Geochemical studies attest that source rocks were also deposited in the Lower Permian and Upper Triassic-Lower Jurassic. Hydrocarbon exploration has concentrated on short cycles up to 50 metres thick often with 'productive horizons' at their top. In general these cycles can be found throughout the basin, but some have a limited lateral extent of only a few kilometres. The 'productive horizons' are part of a typical succession of lithologies, representing a transgressive-regressive cycle.

Reservoir rocks are found in Permian through Devonian intervals. The regional seal for the hydrocarbons is Permian salt above Devonian salt. Four plays have been

identified below the Permian seal: Devonian, Lower Carboniferous, Middle Carboniferous, and Upper Carboniferous-Lower Permian. The Devonian is the most difficult to exploit because it is located in the deepest and structurally most complex part of the rift basin. During this period basin deposition was confined to the graben and volcanics are present in many places instead of clastics. Therefore, even though some commercial flows have been found the future prospects are not good.

The Lower Carboniferous has important reservoir rocks. Oil has been discovered in a variety of traps: in closed structures and monoclines, on highs and in depression zones, or sealed by closure, faults, or lithological changes. The pools are almost invariably in sandstones and siltstones, with rare occurrences in carbonates. Around 40 sand-silt horizons occurring at depths of between 700 and 5,600 metres are recognised with good possibilities of containing hydrocarbons. Pore permeability is dominant at depths of 2-3km; pore and fracture permeability at depths of 3-4.5km and then fracture permeability at 4.5-5km.

The most important traps and seals are Devonian and Permian in age. The most common are salt ridges, pillows, domes and diapirs. Some combination traps are known, but exploration of stratigraphic/lithologic traps has been limited. The salt structures are aligned in rows parallel with the margins of the graben system. Some evidence indicates that oil was once present in traps in the gas-rich south-eastern part of the depression. It is generally thought that overmaturity has led to the destruction of oil and its replacement by gas.

Most future prospects are for additional field development or step-outs resulting from the mature stage of basin development. These are typically bypassed pay zones, untested fault blocks in existing fields, or salt domes with untested intervals. Ulmishek and Masters (1993) estimate undiscovered oil ranging from 27mt to 200mt with 100mt most likely. Their estimate for undiscovered gas is 280bn-1,100bn cu metres, with 650bn cu metres most likely. The basin has been intensively explored to about 3,500 metres and the remaining potential is for gas at a depth of from 3,500-6,000 metres. A potential deep target is the Devonian interval, poorly tested by the Ukrainians because of difficulties with deep drilling and high pressures. Predicted future reserves are about 130mt of oil and 550bn cu metres of gas (Gustavson Associates Inc 1992; Grabhorn 1996; Volodymyv 1985-93).

### *Carpathian region*

The Carpathian region is the second most important producing area in Ukraine. The history of oil discoveries in this region begins in the 18th century. The first extraction methods involved hand-dug pits and seepages and only in the mid-19th century was the first well drilled mechanically. The first gas field was found in 1920. The prevailing location of oil is in the inner zone whereas gas tends to be located in the outer zone. Despite continuing drilling no major fields have been found since 1944.

Potential source rocks abound, chiefly organic rich shales from Palaeozoic, Jurassic, Cretaceous, Oligocene, Miocene (Tortonian), and Pliocene (Meotian and Dacian) sections. However, there is little detailed information on their histories. Most of the pay zones are in Palaeogene sands. The Oligocene bituminous marls and shales, and the Pliocene (Meotian and Dacian) shales are the most promising source rocks. The Meotian shales seem to have supplied reservoirs of the same age with a paraffinic oil and gas. The Dacian shales have sourced neighbouring reservoirs with a naphtho-



aromatic crude. Gas generally prevails in the younger series. Migration seems to have been mostly lateral with diapirism allowing some vertical migration. The Medynich Formation (lower part of Middle Jurassic) consists of sandstone units inbedded with silty-clays which have an overall formation thickness of 400-450 metres. The silty-clay sediments are good source rocks.

The principal reservoirs in the Lviv trough are Palaeozoic. This area offers more important perspectives for gas than for oil. In the Precarpathian depression reservoirs are almost restricted to clastic sediments, mainly calcareous and quartzose sandstones, conglomerates and very sandy marls. They were deposited during the Cenozoic, Oligocene, Miocene and Pliocene intervals. The two most important producing zones are Pliocene in age. They are the Meotian sands from the Lower Pliocene and the Dacian sands from the Upper Pliocene.

The Meotian sands represent brackish and freshwater environments and constitute the principal reservoir in most fields. They have good reservoir properties with average porosities of 25-30% and average permeabilities of 200 millidarcies up to depths of 2,000 metres. However, these characteristics decrease with depth. Therefore, the net effective thickness of the sands is 85 metres. Reserves are estimated at 1mt of recoverable oil a square kilometre. The Dacian sands have a more irregular extent but have better reservoir characteristics, mainly in terms of thickness. Estimated reserves are 4mt/sq km of recoverable oil. Some cementation during diagenesis means that recent fracturing is important in determining reservoir characteristics. In the lower part of Middle Jurassic the best target for oil and gas exploration is the Medynich formation, whose sandstones have average reservoir properties. Porosity reaches 12.5% and permeability 216 millidarcies (Gustavson Associates Inc. 1992; Grabhorn 1996).

The most important traps in this region are structural, with minor sedimentary traps. Structural traps tend to be anticlines that have been fractured or even overturned limbs. Diapiric salt often caps the folds. These structures have been the primary targets for exploration. Despite structure variability in this region, an inner and outer zone can be distinguished. In the inner zone Tertiary nappe structures predominate, sometimes thrusting the Tertiary on to Mesozoic formations. In the outer zone a decrease in the intensity of folding occurs from the more internal to the external zones. Stratigraphic traps are less common than structural ones, an example being lenticular sandstones deposited in Oligocene and Sarmatian periods.

Seals are distributed throughout the region, the most important being Oligocene shales overlying younger sandstones, upper Helvetian sandstones and the Pontian and lower Levantian marls which seal the Pliocene accumulations. The Kokhanov formation, consisting of black and brown argillites enriched by organic matter, is a reliable seal for the Medynich formation.

Several oil and gas deposits are currently being explored, and hence future prospects are for deeper pay zones in existing fields, secondary recovery or smaller stratigraphic traps.

### ***Crimean-Black Sea-Caucasian region***

The Crimean-Black Sea-Caucasian geographical/geological region is relatively unexplored. The Crimea is the most developed part of this region while the Caucasus



(lying outside Ukraine) is still mostly uncharted territory. Oil was first found in 1864 in the eastern part of the Indolo-Kuban basin, adjacent to the Black Sea. However, commercial production in the region started only in the mid-1950s and since then a number of small fields have been found. This region is mainly gas-rich with some major fields such as Golitzyn located west of the Crimea.

In the literature a number of source rocks of Mesozoic and Cenozoic age are reported. The problem is that their history is poorly understood and highly complicated as a result of the two orogenic phases. The most important source rock found to date is the Oligocene-early Miocene Maykop suite. It is a mixed sequence of sandstone, siltstone and shale with minor carbonate. It was interpreted as a marine molasse platform facies. This suite varies greatly in thickness and facies over short distances. Middle Jurassic source rocks are another strong possibility. It has been reported by Ulmishek and Harrison (1981) that Mid-Jurassic sandy, silty and clayey beds contain an average of 1-1.2% of dispersed organic matter that is mainly of sapropelic (type II oil-prone) origin.

Targeted reservoirs in the Indolo-Kuban basin have been in the Mesozoic (Jurassic and Lower Cretaceous) and Cenozoic (Palaeocene, Eocene, Oligocene and Miocene). In the Karkinitzky-North Crimean basin there are good perspectives from Triassic to Miocene. Jurassic reservoirs are mainly conglomerates and well sorted, fine-grained sandstones. Sandstone average porosities are 10-16% and permeabilities between 22 and 277 millidarcies. Cretaceous reservoirs are fractured carbonates and porous sandstones. The fractured carbonates are the most important oil reservoirs in the Indolo-Kuban basin, and their porosity and permeability vary with the degree of fracturing. Porosities range from 3% to 12% and permeabilities from 2 millidarcies to more than 200 millidarcies. The sandstones have higher permeabilities (12-18%) and average 200 to 300 permeabilities. In the Azov-Kuban basin reservoirs are Palaeocene sandstones with porosities of 10-27% and permeabilities in the range of 9 to 4,000 millidarcies. However, the most important regional reservoirs are the Maykop series of sandstones. Their porosity ranges from 5% to 32% and they have permeabilities ranging from 12 to 486 millidarcies.

The overwhelming majority of traps found to date are structural, chiefly anticlines. A few combination traps have also been identified. The Maykop suite is not only the main source and reservoir but also the most important seal.

There are a number of future exploration possibilities, the most promising being in the Black Sea and Azov Sea shelves. Bypassed areas and stratigraphic traps are other good possibilities.

### ***Summary***

Even though hydrocarbon exploration has been going on since the mid-1950s and some regions such as the Dnieper-Donets and Carpathian are currently at a mature stage of exploration, there are reasonable perspectives for new discoveries in the Crimean-Black Sea-Caucasian region. Other possibilities are secondary recovery and bypassed areas that have been poorly exploited by the Ukrainians, lacking advanced technology (see Table 1.2 for total oil and gas reserves).

## Coal

Coal is the resource that Ukraine contains in greatest abundance (see col. 1 of Table 1.2). The most important reserves are located in the eastern Dnieper-Donets basin. There are two main types of coal deposits: hard coal (total ABC reserves of 44bn tonnes) and brown coal (total ABC reserves of 3bn tonnes) (see Table 1.2).

Hard coal is found in the Donets coal basin (Donbas) located in the south-east of the country. The deposits are extensive and were deposited in Middle and Lower Carboniferous. The majority of the seams are thin (0.45-1.3 metres), with few reaching a thickness of 1.5 metres or over. The aggregate thickness of the coal measures ranges from 9 to 45 metres and seams are found up to depths of 1,800 metres. Estimated reserves for this region amount to 43bn tonnes. These are very good quality coals distributed by anthracites (over a quarter of reserves), gas coals (about a third of reserves) with the remainder consisting of coking, steam-fat and steam-baking coals. Reserves of steam coal, which is used for electricity generation, are found in the Luhansk region (22bn tonnes) and in the western Donbas area (15bn tonnes). There are sites for the construction of new mines with 4.5bn tonnes of hard coal reserves and depth of occurrence between 600 and 900 metres.

Hard coals are also found in the north-west of Ukraine in the Lviv-Volyn coal basin. The main coal seams are found in Lower Carboniferous with fewer in Middle Carboniferous. The average coal seam thickness is of 0.5-1 metre and occurs at depths of between 300 and 600 metres. Reserves have been put at 0.9bn tonnes for seams over 0.5 metres thick.

Brown coals are found in the Dnieper basins and in the Carpathian region. The Dnieper-Donets basin contains the most important reserves. The coal seams are Palaeogene in age, occur at depths of between 2 and 150 metres and vary in thickness from 1 to 30 metres. Among seams over 1 metre thick, reserves reach 4,000mt. Most of the shallow seams have been exploited, and the deep coal seams are much less accessible and therefore more expensive to mine.

**Table 1.2: Ukraine's reserves and production of energy resources**

	ABC reserves <sup>1</sup>	Estimated total reserves <sup>2</sup>	Annual production (1996) <sup>3</sup>	Production targets for 2010 <sup>4</sup>
Oil (mt)	147	153	4	7
Gas (bn cu metres)	1,130	1,160	18	35
Hard coal (mt)	44,000	52,000	72 <sup>5</sup>	165
Brown coal (mt)	3,000	—	2	5

1 Official Ukrainian figures as of 1 January 1996.

2 IEA 1996 (which also gives a figure of 80mt for condensate).

3 Official Ukrainian figures for 1996.

4 Plan of the Ukrainian government as of 1997.

5 IEA 1996 gives a figure of 66mt.

Sources: Ukrainian Ministry of Statistics; Ukrainian Ministry for the Coal Industry; Ukrainian State Committee for Geology (from IEA 1996)



## Uranium

Uranium deposits are found in two adjacent regions of the Ukrainian shield, the Krivi Rih (Zhovti Vody and Pervomaiske deposits) and the Kirovohrad (Michurinsk deposits). These deposits were all formed during the late stage of Early Proterozoic craton proactivation, which was a consequence of granitisation (2.0bn years) and occurred synchronously with the emplacement of the rapakivi granite plutons in adjacent blocs. The ore deposits are found grouped near the centres of albite bodies and are shaped as upward-branching lenses and stocks. They have variable thickness, from 3-5 metres to tens of metres and their length can be 1km or more with widths from a few tens to hundreds of metres. However, the deposits are low grade with an average between 0.08% and 0.2% U. Estimates of reserves made by Laverov et al. (1992) exceed 200,000tU. The International Atomic Energy Agency (IAEA) in 1993 reported reasonably assured resources of 82,000tU.

Mining activities started in the mid-1950s near the city of Zhovti Vody, with the first uranium concentrates being produced in 1959. The initial deposits have been exhausted and mining activity is now localised in the central region of Kirovohrad in two underground mines, Ingulsky and Smolinsky. These reserves are estimated at 38,000tU (IAEA, 1992).

## ENVIRONMENTAL ISSUES

The environmental issues in Ukraine have been dominated by the Chernobyl nuclear accident. However, despite its serious environmental consequences there are a vast number of other pollution problems. And, if the situation at Chernobyl is relatively well known the same cannot be said of the air, water and land pollution affecting most of the Ukrainian territory. An environmental disaster status could already be awarded to the Dnieper-Donets and Crimean regions, as well as to the Dnieper river. These problems are the result of the rapid Soviet industrialisation and years of severe neglect of the environment. As the second largest industrial republic of the Soviet Union, Ukraine has inherited not only the problems but also outdated industrial, mining and drilling processes and infrastructure that need to reconvert to improve its environmental conditions. The newly independent Ukrainian state faces huge costs if it wants to improve its natural environment for future generations.

### Types of pollution

#### *Air pollution*

Air pollution is a major problem and some regions could be classified as environmental disasters. The problem affects principally the health of children and an acute example is the city of Zaporizhia in the Dnieper-Donets region, where in October 1989 the Soviet government had to suspend all new industrial construction. In 1989 a total of 15.8mt of pollutants were released into the atmosphere in Ukraine. The most important types of air pollutants are dust, SO<sub>2</sub>, CO, NO<sub>x</sub> and hydrocarbons. As Ukraine's industrial production has declined sharply since the break-up of the Soviet Union, data for the late 1980s give a better idea of the pollution potential of the country's industry (see Table 1.3).



**Table 1.3: Types and quantities of air pollutants in Ukraine, 1989**

Pollutant	Total emission (mt)	Pollutant	Total emission (tonnes)
CO	7.8	Fluorine compounds	3.1
SO <sub>2</sub>	3.1	Chlorides	1.3
NO <sub>x</sub>	1.1	Mercury	1.2
Dust	2.3		
Hydrocarbons	1.3		

Source: Mnatsakanian 1992

This situation is caused by the lack of air purification facilities at industrial and other plant. According to Mnatsakanian (1992), the share of the energy, chemical and coal industry in air pollution was 30-40% and of the petrochemical industry 20%. (See Chapter 8 for further information on air pollution caused by the Ukrainian power generation sector.) The worst affected areas are the Donbas and Dnipropetrovsk region, the capital Kiev, the city of Odessa and the Crimea.

### *Water pollution*

Water pollution is another serious problem: 15% of total freshwater reserves, i.e. surface water (hydrological component) and groundwater is being polluted by human activities. The amount of untreated sewage was estimated at 14.7% in 1989. Both the Dniester and Dnieper rivers and smaller bodies of water have been severely contaminated by agricultural run-off and suffer from eutrophication. Serious damage such as salinisation, waterlogging and erosion has been caused by irrigation water leaking from poorly designed and maintained canals. This problem is most severe in southern Ukraine. In the Donbas area both surface and groundwater are extremely polluted (see Table 1.4).

**Table 1.4: Principal water pollutants in Ukraine, 1989**

Pollutant	Total emission ('000 tonnes)	Pollutant	Total emission (tonnes)
Sulphates	1,398	Iron	1,924
Chlorides	1,082	Mercury	119
Organic matter	136	Copper	94
Ammonia	29	Chromium	92
Phosphorous	8	Phenols	72
Mineral oil	7	Nickel	68
		Zinc	22

Source: Mnatsakanian 1992

As a result of water pollution and deterioration of standards of hygiene, Ukraine suffered serious epidemics after the break-up of the Soviet Union. In summer 1994 nearly 1,000 people were suffering from cholera, and 21 died. In the same year 3,000 people were suffering from diphtheria, and more than 100 died. In the Crimea

hepatitis-A viruses were found in drinking water. Twenty-eight beaches on the Black Sea coast were closed because of contamination. In summer 1995 the river Donets was heavily polluted after an accident in the sewage plant of Charkiv. Only in 1996 did Ukraine's public health authority succeed in reducing morbidity.

### ***Soil pollution***

Soil has also been severely polluted. Vast polluted areas exist on the left bank of the river Dnieper including the Donbas, the Krivi Rih and Dnipropetrovsk areas, and the industrial centres of Zaporizhia and Mariupol. These areas combined are equivalent in scale to the area affected by Chernobyl. Erosion, salinisation and waterlogging are the most important problems. Of Ukraine's arable land area, 50% is affected by deflation (i.e. wind transport of surface debris), 29% by erosion, 13% by acidification, 4% by salinisation and 3% by waterlogging (Soviet State Committee of Statistics 1989).

An estimated 200,000 hectares (ha) have been disturbed by mining and industrial activities. Mining has led to the removal of topsoil. The disposal of solid wastes constitutes a further critical environmental issue. Mining and industrial activities generate large quantities of waste. The disposal of this does not meet environmental standards and leads to even worse soil and water contamination problems. The heavy use of pesticides in agriculture is another source of problems.

### **Chernobyl**

The accident at Chernobyl is the biggest nuclear accident so far in the history of nuclear power generation. The accident occurred in 1986 when explosions completely destroyed Chernobyl's reactor No. 4 and released vast quantities of uranium fuel and other radioactive elements into the atmosphere. According to the International Atomic Energy Agency (IAEA bulletin 3/1996) the amount of material released into the atmosphere in the first 10 days was 12 trillion ( $10^{18}$ ) international units of radioactivity. This material consisted of over 100 short-lived radioactive elements, iodines and caesiums. The most contaminated area was within a 30km radius of the site and about 116,000 people had to be moved to other locations. This exclusion zone was later extended and now covers 4,300 sq km.

The most important health impact was the significant increase in the number of radiation-related thyroid cancers, especially among children. Other long-term health impacts were significant psychiatric health disorders caused by anxiety and depression.

The 'exclusion zone' suffered the greatest environmental impacts, and in this area lethal doses of radiation were received by plants and animals. A long-term effect observed is the change in the fertility rates of some animal species. In the surrounding area agricultural and forest land as well as the main rivers were also contaminated with relatively high levels of caesium 137, a nuclide with a half-life of 30 years. In natural resources the accident was responsible for the loss of 4,000ha of pine forest, abnormal growth in 12,000ha of forest and the contamination of 144,000ha of agricultural land. However, the situation is being monitored by numerous organisations and since 1989 the natural environment has begun to recover. (See Chapter 8 for further discussion of the Chernobyl accident.)



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## **CHAPTER 2: POLITICAL AND ECONOMIC PROFILE**

### **HISTORICAL BACKGROUND**

#### **The Middle Ages and early modern age**

The first state on Ukrainian territory, Kievan Rus, was founded in the early Middle Ages. It was a loose union of principalities whose economy was based on trade and agriculture. In 988 Kievan Rus was converted to Christianity and the growing influence from Byzantium, the religious centre of East European Christianity, led to a first peak in the culture of the east Slavs.

But when the Mongols conquered large parts of eastern Europe in the 13th century their destruction was so extensive that it is difficult to find important continuities between the Kievan Rus and later eastern Slavic states.

In the 14th century Ukraine came under Polish-Lithuanian influence and in the 16th century the Ukrainian nobility was assimilated into the new ruling class. But in the Ukrainian steppe, a no-man's land between Poland, Russia and the Ottoman empire, settlers and adventurers, the Cossacks, were trying to form a new state. In 1648 they organised a great revolt against Polish rule. Whereas the Ukrainian territory west of the river Dnieper remained Polish, the Cossacks succeeded in building their own state, the Hetmanate, on the territory east of the river. But to defend their independence against the Poles, the Cossacks had to accept Russia as a superior ally. As a consequence Russian influence continued to grow and in 1764 the Hetmanate was formally incorporated into tsarist Russia.

The Ukrainian territory west of the river Dnieper was ruled by the Poles until their kingdom was divided between Prussia, Russia and the Habsburg empire at the end of the 18th century. The right bank then came to Russia and western Ukraine, i.e. Galicia and Bukovina, was incorporated into the Habsburg empire.

#### **The 19th century**

In the context of the general national awakening in Europe in the 19th century a Ukrainian national movement came into being. The famous poet Taras Shevchenko (1814-1861) transformed the Ukrainian language into a literary language, which gained the respect even of Russian intellectuals. Historians like Nikolai Kostomarov (1817-1885) or Mihail Hrushevsky (1866-1934) agitated against the russocentric view which depicted Ukraine as Russia's 'younger brother' by portraying tsarist Russia as successor of the Kievan Rus. Instead, this group claimed the heritage of the Kievan Rus for Ukraine and thus tried to justify Ukrainian nationalism by the use of history.

But the Ukrainian national movement was too weak to become a dominant political force. The majority of Ukrainian intellectuals were assimilated into a foreign culture. To accept the Russian or the Polish culture offered much better prospects than to identify oneself with the Ukrainian 'peasant culture'. Whereas Taras Shevchenko was



in his time known only to a minority outside Ukraine, another Ukrainian writer, Nikolai Gogol, who preferred to write in Russian, became world famous. Moreover, the authorities, especially in tsarist Russia, suppressed all activities which were meant to raise a Ukrainian national consciousness. As a result the Ukrainian national movement consisted merely of a rather small group of enthusiastic intellectuals. Despite the unfavourable circumstances these intellectuals were able to establish a widely recognised Ukrainian culture, but they had no chance to realise their political goals.

### **The first half of the 20th century**

Only during the first world war, when the Russian empire and the Habsburg empire collapsed, was there a chance to establish a Ukrainian national state in the emerging power vacuum. But the Ukrainian state was unable to organise either a powerful army or an efficient administration. Therefore, it fell victim to German or Russian domination and internal anarchy for most of its short existence between 1917 and 1919. In the end Ukraine was conquered by the Bolsheviks who in free elections had gained the support of only 10% of the Ukrainian population, and the country was incorporated into the Soviet Union. Only western Ukraine, which had been part of the Habsburg empire before the war, then became a part of the Polish republic.

Again Ukraine was divided between the Russians and the Poles and again the advocates of nationalism were suppressed. These developments radicalised especially the younger generation of the Ukrainian national movement in Poland and they turned towards an authoritarian and sometimes even fascist nationalism. But whereas the Ukrainian national movement in Poland was allowed to participate in the political system, the Soviet system under Stalin saw even the cultural activities of the Ukrainian national communists as a threat. All activists of the national movement who had remained in the Soviet Union fell victim to the Stalinist purges. At the same time Stalin's forced collectivisation, meant to channel the food supply to industrial workers, caused a terrible famine from 1932 to 1934, which was responsible for the death of at least 3m people in Ukraine alone.

That is why many Ukrainians greeted the troops of the German aggressors with hope when they attacked the Soviet Union in 1941. But the ruthless German occupation policy, aimed at economic exploitation and guided by racist arrogance, soon disappointed most of the Ukrainians. In western Ukraine in particular a national partisan movement arose. After the German surrender in 1945 the Soviet Union gained control over the whole territory of Ukraine as a result of the westward move of the Polish borders. The Stalinist terror, which had mercilessly eliminated the Ukrainian national movement in the 1930s, now destroyed the west Ukrainian partisan movement and forced the west Ukrainian population into the Soviet-style dictatorship.

Soviet rule led to massive changes in Ukrainian society. The country was industrialised. Urbanisation, the spread of higher education and the introduction of mass media were the most visible signs of a rapid modernisation. Russified Ukrainians became an important part of the ruling Soviet elite and represented Soviet interests in other non-Slavic republics. Moreover, under Soviet rule Ukraine acquired its current borders when in 1954 the Crimean peninsula was transferred from the Russian to the Ukrainian Soviet republic.



## **CULTURE**

The long-lasting dominance of non-Ukrainian ethnicities has marked the Ukrainian culture, as is especially evident in religion and language.

### **Religion**

Under the rule of the Roman Catholic Poles the Orthodox Church in Ukraine accepted the Union of Brest in 1596. In that union the Ukrainian Church was permitted to keep up its Orthodox liturgy and rites but acquiesced in the supreme authority of the pope in all matters of faith and dogma. When Russian influence in the eastern parts of Ukraine strengthened, the remainder of the Ukrainian Orthodox Church was integrated into the Moscow patriarchate in 1686. The conflict between the Uniate Church, named after the Union of Brest, and the Orthodox Church was further complicated at the beginning of the 20th century, when an Orthodox Church independent of the Moscow patriarchate, the Ukrainian Autocephalous Church, was founded. In the Soviet Union the national Ukrainian churches, i.e. the Uniate and the Autocephalous Church, were forced under ground. After the end of Soviet rule the dominance of the Moscow patriarchate was again questioned by the Orthodox Church in Ukraine and the result was a further split leading to the establishment of a separate Kievan patriarchate of the Orthodox Church.

### **Language**

The Ukrainian language as a distinct language can be traced back to the Middle Ages. From a linguistic point of view it is positioned between Russian and Polish, roughly as Dutch is between English and German. But since the Ukrainian nobility was until the 19th century assimilated either to the Poles or to the Russians, Ukrainian developed mainly as a peasant language. Only with the rise of the national movement and the work of Taras Shevchenko was Ukrainian established as a literary language. But the Russian desire to incorporate Ukraine into a Russian empire hampered the development of the Ukrainian language since tsarist and later Soviet authorities saw its use as a sign of Ukrainian nationalism and separatism. Thus the language of higher education, of administration, of the political and cultural elites was Russian. Every Ukrainian interested in making a career had to learn Russian. As a result the Ukrainian language was again reduced to an everyday language. In addition, many Russian words were added to the Ukrainian vocabulary. Only after the break-up of the Soviet Union, when the Ukrainian state started to promote the use of the Ukrainian language, was the trend towards linguistic russification stopped. Ukrainian then became the dominant language in state administration and education.

### **Regional differences**

As a result of these developments it is possible to divide present day Ukraine into four historical-cultural areas:

- western Ukraine is the stronghold of Ukrainian nationalism. The large majority of the population prefers the Ukrainian to the Russian language. The Uniate Church is dominant;

- central Ukraine has a certain sympathy for the national movement, but nationalist candidates have been unable to gain a majority in elections. The Ukrainian language is gaining predominance over Russian only slowly and as the result of official promotion. In religious affairs the Ukrainian Orthodox Church, i.e. the Kievan patriarchate, seems to be dominant;
- eastern and southern Ukraine are strongly informed by Russian influences. More than a quarter of the population are ethnic Russians and more than 75% of the population prefer Russian to the Ukrainian language. The organisations of the Ukrainian national movement exist only on paper. The Russian Orthodox Church (Moscow patriarchate) dominates religious affairs;
- the Crimea, which was transferred to Ukraine only in 1954, is dominated by Russian traditions. More than 60% of the population are ethnic Russians. The movement of the Crimean Tatars (about a tenth of the Crimean population) also has some political relevance.

## NATIONAL MOVEMENT AND INDEPENDENCE

### The beginnings

From the 1950s until the mid-1980s the active Ukrainian national movement was limited to a handful of dissidents. Only when Mikhail Gorbachev began to open up Soviet society could the national movement gain broader support within the Ukrainian population especially in western Ukraine. Favoured by the general dissatisfaction with the Soviet system and organising protests against the official handling of the Chernobyl catastrophe the national movement became the main opposition force in Ukraine from 1987 onwards. In 1989 Rukh (Ukrainian for 'movement') was founded as an umbrella organisation for the national opposition movement. By the end of 1989 it claimed to have more than 300,000 members.

The communist leadership of Ukraine reacted by suppressing the rise of the national movement. Some of its organisations were outlawed and leading members were arrested. Leonid Kravchuk, at that time party secretary for ideology, initiated a propaganda campaign against the national movement. But the republic's leadership had no chance to ignore the reforms initiated by Gorbachev. After the first semi-free elections in the Soviet Union in March 1989 the Ukrainian national movement gained in the following year a quarter of the seats in the republican parliament. In western Ukraine some national candidates were able to win local elections and took over local governments.

### The move for sovereignty

With the end of the communist monopoly on power approaching, the communist leaders of Ukraine sought alternative positions. The Ukrainian party leader, Vladimir Ivashko, went to Moscow. Kravchuk, the party secretary for ideology, became head of the Supreme Rada, the republican parliament. He stayed within the communist faction but began to build a national communist coalition. He combined the



opposition of the communist leadership against the centre under Gorbachev with the nationalist claim for independence. In July 1990 the Ukrainian parliament almost unanimously passed a declaration of sovereignty, which – though not declaring Ukraine's independence – denied the centre any right to interfere in Ukrainian affairs.

In March 1991 Gorbachev reacted to the growing pressure from the republics and initiated a referendum on the future of the Soviet Union. Whereas 71% of the Ukrainian population voted in favour of the Soviet Union, 80% also supported the Ukrainian declaration of sovereignty. As head of the Ukrainian parliament, Kravchuk was then representing Ukrainian interests in the negotiations for a new Soviet constitution. He used the results of the referendum to demand that the centre give up all its powers.

### **The move for independence**

During the conservative coup in Moscow in August 1991 – which sought to prevent the signing of a new union treaty – Kravchuk adopted a wait-and-see policy. But when the coup had failed and the centre, under Gorbachev, had lost all its powers, he became the main advocate for Ukrainian independence. As early as 24 August 1991 the Ukrainian parliament adopted a declaration of independence which was to be confirmed in a referendum on 1 December 1991, on the same day as presidential elections took place. In consequence the election campaign was dominated by the independence question and Kravchuk used this to establish himself as the candidate of all those dissatisfied with the Soviet system. With the help of the media, still under his control, he was able to organise a professional campaign. In the end 90% of the population voted for independence and 62% for Kravchuk as president of the newly independent state.

### **National movement and national state**

After his victory Kravchuk had three options to legitimise his leadership. First, he could return to a Soviet-style authoritarian rule with the help of the old Soviet bureaucracy. Second, he could implement political and economic reforms to transform the country into a western-style democracy with a market economy, and third, he could continue to play the national card and stay popular through a nationalist policy.

Kravchuk decided according to his political background. He had strong roots in the Ukrainian communist party and good connections to the former Soviet bureaucracy. On the other hand he had won the elections with the claim for Ukrainian independence. He, therefore, chose a coalition of the old Soviet bureaucracy and moderate nationalists as his power base. By avoiding any political or economic reform he gained the support of the old Soviet bureaucracy, which could go on very much as it had in Soviet times. At the same time he could attract the majority of the national movement by promoting the Ukrainian language and national culture. Ukrainian became the only official language. In education Soviet motives were replaced by Ukrainian national themes. Kravchuk also developed close links with the national Ukrainian Orthodox Church.



But the support which this coalition of Soviet bureaucrats and moderate nationalists could find in the population was not enough to win general elections. Above all, the catastrophic economic recession, worsened by Kravchuk's inactivity, discredited his policies. As a result he lost the presidential elections in summer 1994 and Leonid Kuchma was elected in his place.

Since Kuchma had based his campaign on a pro-Russian platform he met severe opposition from the national movement; and the national movement was strong enough to force the president to adopt a cultural policy aimed at promoting the national culture. Moreover, Russia's disapproval of closer co-operation made it necessary for Kuchma to orientate his foreign policy more towards Nato and Ukraine's western neighbours. This, too, was greeted as a victory by the national movement. Though the national movement is no longer able to dominate politics under Kuchma, it is still an important political force.

## **POLITICS**

### **The present political landscape**

#### ***Nationalist parties***

Since the Communist party had been banned after the failed coup in August 1991, the national movement was the first organised force to appear on the political scene of independent Ukraine. To ensure that the newly elected president would stick to his nationalist course, the majority of the national movement, united in the Congress of National-Democratic Forces, chose to support Kravchuk. The leading parties of the pro-Kravchuk wing of the national movement were the Ukrainian Republican Party (URP) and the Democratic Party of Ukraine (DemPU). The other strong force within the national movement is the liberal wing, which took over the popular movement Rukh and is led by the former dissident and human rights activist Vyacheslav Chornovil. The liberals demand the implementation of democratic reforms after the national aim of independence has been reached. Because of their anticommunist orientation they were against any co-operation with Kravchuk. The radical nationalist wing of the national movement, represented by the Ukrainian National Assembly (UNA) and the Congress of Ukrainian Nationalists (KUN), exists only in western Ukraine and could never gain more than 3% of the votes in general elections.

#### ***Communist parties***

The only other well-organised political force is the left camp. Since the Communist party had been outlawed, the first left party to appear in independent Ukraine was the Socialist Party of Ukraine (SPU). It became de facto the successor to the Communist party and was the biggest party in Ukraine until the Communist Party of Ukraine (KPU) was re-established in 1993. With a largely unchanged programme, including the demand for the restoration of the Soviet Union, and with the help of the old organisational structures, the Communist party quickly became the biggest political party in Ukraine. Another party belonging to the political left in Ukraine is the Agrarian party, which has its roots in the Agrarian Union of Soviet times.

### *Pro-reform parties*

Whereas the national movement and the left camp dominate the political scene, pro-reform forces have been slow to emerge. Many political reformers are integrated into the liberal wing of the national movement and the development of a class of entrepreneurs, which would support economic reforms, has so far been hampered by the slow pace of economic reforms. Moreover, there is little support for pro-reform forces in society. Whereas western economists argue that the decline in the Ukrainian economy has resulted from the Soviet legacy and the lack of consistent reforms, the Ukrainian population blames economic reforms for the bad economic situation. As a result only the 'New Ukraine', a loose union of liberal-democratic forces, and the National Democratic Party of Ukraine (NDPU), which is now backed by President Kuchma, seem to have a defined role in Ukrainian politics.

### *Pro-Russian forces*

Pro-Russian forces have also been slow to emerge, mainly because they disagree on political aims. In 1991 the majority even of the ethnic Russians voted in favour of Ukrainian independence in the hope that they would benefit economically from the end of the Soviet system. But when the Ukrainian economy, against their expectations, performed even worse than the Russian and when Kravchuk implemented a nationalist cultural policy, their pro-Russian orientation was revived. Nevertheless, the large majority of russophiles accept the Ukrainian state. The smaller proportion of Russians who favour the reintegration with Russia and the return to the Soviet system are integrated into the Communist party.

Only in the Crimea did a clear pro-Russian force, the Russia bloc, gain political relevance. Its candidate won the regional elections in 1994 and since then the conflict over the status of the Crimea has been one of the main factors for the strengthening of Ukrainian statehood. A large measure of autonomy for the Crimea was accepted by Kiev as early as 1992 in order to keep the peninsula within Ukraine. But Crimean separatist and pro-Russian movements backed up by nationalist politicians from Russia kept the conflict alive.

### *Popular support*

Altogether the national movement has the support of about 20-30% of the Ukrainian population, centred in western Ukraine. The left and pro-Russian camp, too, has the firm support of no more than a third of the population. Its stronghold is the eastern Ukraine with its russophile population and heavy industry. Only about 15% of the population have a clear orientation towards market economy and democracy. The remaining 25-35% are undecided or show no interest in politics.

### *Recent political developments*

Leonid Kuchma achieved his victory over Kravchuk in the 1994 presidential elections by campaigning on a pro-Russian platform. With a vague promise of economic reforms, he also gained the support of those frustrated by the poor economic performance of the country. With a majority of 45-52% of the votes, Kuchma was elected president of Ukraine.



As president, Kuchma has pursued a pragmatic policy. A plan for moderate economic reforms was worked out. Since economic reforms necessarily met with communist opposition Kuchma lost the support of the extreme left despite his pro-Russian stance, especially in foreign policy. To find a new power base in the Ukrainian parliament as well as among the population, Kuchma adopted a cultural policy intended to satisfy the moderate nationalists. The use of the Ukrainian language by the state administration and in the media was further promoted and Kuchma, himself a Russian speaker, quickly improved his knowledge of Ukrainian.

### *Move to the political centre*

It seems to be Kuchma's strategy to establish himself as a centrist politician, attracting support from moderate reformers with his economic policy, from moderate nationalists with his cultural policy and from moderate pro-Russians with his foreign policy. This strategy may secure Kuchma a victory in the next presidential elections, but it is not enough to gain a stable majority in parliament, which is dominated by communists and nationalists. Kuchma's economic reform plans met with particular resistance from parliament. Because the Ukrainian constitution in force until 1996 was written in Soviet times the relationship between parliament and president was not clearly defined. The result was a permanent power struggle which was finally resolved with the adoption of a new constitution on 28 June 1996.

### *The new constitution*

According to the new constitution the president appoints the prime minister with the consent of parliament and confirms the other members of government when nominated by the prime minister. He has the right to dismiss members of government, including the prime minister. He is also able to reorganise the structure of the government by creating or abolishing ministries. Thus the president is the head of the executive branch, though this is not explicitly stated in the constitution. Parliament, the main legislative body, has to authorise the appointment by the president of the prime minister, the general procurator, the head of the Anti-Monopoly Committee, the State Property Fund and the National Bank. A third of the members of the newly created Constitutional Court are appointed by parliament, the remainder by the president and by a congress of judges.

Altogether, the constitution consolidates the progress of Ukraine towards a stable democratic system with a free market economy. It guarantees general human rights and the right to private ownership, including ownership of land. But as a concession to communist deputies, Soviet style rights to a job, to housing and in general to satisfactory living conditions were also included in the constitution.

Ukrainian is the official language, but the free development of the languages of ethnic minorities is guaranteed. To avoid Russian interference in Ukraine's ethnic policies, dual citizenship is not foreseen in the constitution. To satisfy the strong Russian faction in the Crimea, the peninsula remains an autonomous republic in an otherwise unitary Ukrainian state.



## Foreign policy

### *Relations with Russia*

The main problem of Ukraine's foreign policy is the country's ambivalent position towards Russia. On the one hand, Ukraine has to co-operate with its mighty neighbour in the east. Ukraine is dependent on Russian energy supplies. Russia is the biggest market for Ukrainian exports. The Russian part of the Black Sea fleet is stationed on Ukrainian territory. Of the Ukrainian population, 22% are ethnic Russians. On the other hand, it has been vital for the existence of Ukraine as an independent state to demonstrate that Russia cannot interfere in internal Ukrainian affairs. This point has proved to be problematic not only because Russia considers the former Soviet Union as its sphere of influence but all the more because prominent Russian nationalists continuously advocate the idea of a Slavic Union between Russia, Ukraine and Belarus. The misfortune of Belarus, which has been developing close ties with Russia, has been the main deterrent for the Ukrainian national movement to see Ukraine's future more closely linked with Russia's.

In Russia, though, the idea of a Slavic union is popular and Russian nationalists are using the 'Ukrainian question' to boost their support. This question offered Russian politicians a number of possibilities to put pressure on the newly independent state, which they often describe as 'a younger brother'. The main points of conflict between Russia and Ukraine after the break-up of the Soviet Union were:

- the transfer of Ukraine's nuclear weapons to Russia;
- the status of the ethnic Russian population in Ukraine;
- the division of the Soviet Black Sea fleet between Russia and Ukraine;
- the status of the Crimea and especially of the Crimean naval base in the city of Sevastopol;
- the Ukrainian debt for Russian energy supplies.

The first Ukrainian president, Leonid Kravchuk, like the Russian nationalists, used the conflict to prove his nationalist credentials at home. This helped him to gain the support of the national movement and he became highly popular in western Ukraine. But at the same time he disappointed the pro-Russian population in eastern Ukraine.

The second Ukrainian president, Leonid Kuchma, who had won the elections with a pro-Russian platform, tried to develop a strategic partnership with Russia. Ukraine transferred all its nuclear weapons to Russia. The rhetoric on issues of nationality and on relations with Russia became more moderate. As a result the majority of Ukraine's ethnic Russians accepted Ukrainian statehood and the political leadership of Kiev. And, with the first signs of macroeconomic stabilisation, Ukraine began to pay for Russian energy supplies to a degree the Russian prime minister has termed exemplary for other post-Soviet countries.

But relations between Kiev and Moscow remained tense because the opposition to a compromise on the Black Sea fleet and the status of the Crimea was strong in both countries. The Russian parliament was of the opinion that the act transferring the Crimea to Ukraine in 1954 had been null and void from the beginning. Ukraine, on the other hand, was afraid that giving up the Crimea would endanger Ukrainian statehood as such. Only after four years of intensive talks was agreement finally reached in May 1997. During a long-delayed visit to Kiev the Russian president, Boris Yeltsin, signed the Russian-Ukrainian friendship treaty.

Despite the persistent refusal of the Russian parliament to acknowledge that the Crimea belongs to Ukraine, Yeltsin took the political risk of recognising Ukrainian independence and territorial integrity for the first time. As compensation, Ukraine agreed in a separate treaty to allow Russia to keep its share of the Black Sea fleet at Sevastopol for the next 20 years. During that period, Ukraine will lease port facilities to Russia, which will pay \$100m a year for the use of the port, with payment taking the form of cancellation of Ukraine's energy debts.

### *Relations with the West*

From the beginning of its existence as an independent state Ukraine has been looking westward to find a counterweight to Russian influence. The US has strengthened its ties with Ukraine against the case that Russia might elect a communist president. As a result of this mutual interest a relatively close relationship emerged. As early as February 1994 Ukraine signed a partnership for peace agreement with Nato and in the following year undertook more joint military exercises under this programme than any other former member of the Soviet bloc. In May 1997 Ukraine signed an agreement with Nato which includes the provision of consultations whenever Ukraine considers itself faced by an external threat. Moreover, Ukraine became one of the main recipients of western financial aid; it is the third largest recipient of US aid (after Israel and Egypt).

On the other hand, it is obvious that Ukraine will not be completely integrated into western military or economic structures in the near future. The presence of Russian troops on Ukrainian territory until at least 2017 is a definite hindrance to admission to Nato membership and the country's economic situation makes it unfit for any kind of membership of the European Union. Ukraine, therefore, is attempting to develop closer ties with its east European neighbours.

The relationship with Poland, Ukraine's second largest trading partner after Russia, has been made a high priority. Slovak-Ukrainian relations have developed especially smoothly. The relationship with Romania, however, has long been strained by a number of problems, the most serious of which were territorial disputes and minority issues. Only when Romania was given serious hope that it could join Nato on condition that it had no territorial disputes with its neighbours was a Romanian-Ukrainian treaty on friendship and co-operation signed in May 1997.



## THE ECONOMY

### Economic policy

#### *Lack of reforms under Kravchuk*

After its declaration of independence Ukraine started to create its own governmental institutions and to draft elementary regulations on forms of property, the tax system and foreign investment. But Russia's far-reaching liberalisation of prices in early 1992 forced Ukraine to change the envisaged course of reforms and to follow the Russian example, since the two countries still had the rouble as common currency. To secure control over the development of domestic prices Ukraine then left the rouble zone and retained a system of state controlled prices.

Only in autumn 1992 when Leonid Kuchma was appointed prime minister by the then president, Leonid Kravchuk, was a serious attempt at economic reform made. Provided with additional powers, Kuchma tried to fight inflation and to improve relations with Russia, Ukraine's main trading partner. He was against the introduction of shock therapy, though, arguing that the social consequences would be unbearable for the country.

But President Kravchuk used the absence of economic success as early as June 1993 to take direct control over the government and in September 1993 Kuchma was dismissed. As a consequence of the resulting political crisis Kravchuk was forced to accept parliamentary elections for March 1994 and presidential elections for the following June.

Political conflicts thus made all attempts at economic reform impossible until mid-1994. The Ukrainian economy was still controlled by the old Soviet bureaucracy. The privatisation process was hampered and later stopped completely by parliament. As a result of this inconsistent economic policy the situation in the election year, 1994, was even worse in Ukraine than in Russia. According to official statistics the living standard of the population was 80% below its 1991 level. This led to a change of mood in the Ukrainian population. The economic crisis pushed other questions into the background and the pragmatic candidate Leonid Kuchma was elected as the new president in July 1994.

#### *Attempts at reform under Kuchma*

Under the leadership of Kuchma a comprehensive plan for economic reform was worked out. The plan gained the approval of the IMF and Ukraine received promises of financial help worth \$6bn by the end of 1995. Nevertheless, due to the disastrous economic situation, not much room for manoeuvre was left. The budget deficit (including extra-budgetary state funds) had reached 20% of gross domestic product (GDP) when Kuchma took office.

In these circumstances, deficit spending for the promotion of economic growth or the creation of a comprehensive social security system was impossible. Economic reforms were, therefore, limited to measures which did not need to be financed by the state. As in most transition countries, the battle against inflation, the liberalisation of prices and foreign trade, privatisation and the creation of legal conditions for a market



economy were made the corner stones of economic reform. Since low inflation was the main condition set by the IMF for its credits, Ukraine made every effort to fight inflation. The major success recorded in reducing inflation during the first half of 1996 improved public faith in the monetary authorities, and in August 1996 the replacement of Ukraine's temporary currency, the karbovanets, with a new currency, the hryvna, was announced. The temporary instability that followed the monetary reform was minimal and the inflation targets of the IMF were reached.

Whereas Ukraine's monetary policy was undoubtedly successful, the creation of market conditions is a much more complicated task for the country's economic policy. The privatisation process made slow progress and because of the resistance of the regional bureaucracy the privatisation targets set by President Kuchma were not reached. As a result the private sector still contributed less than 50% of Ukraine's GDP in 1997. The creation of a legal environment for a market economy was hampered by the corrupt and sometimes disorganised bureaucracy as well as by parliament with its critical attitude towards market reforms. Parliament also hampers the implementation of the government's economic policy. The 1997 budget, for example, was passed only in June 1997.

Although the pace of the reform process has been slow, Kuchma at least succeeded in guaranteeing steady progress. He is not dependent on pressure groups or lobbies and so far he has not had to bow to public opinion, either. He seems to hope that his economic policy will bring the first signs of recovery before the next presidential elections in October 1999.

### **General economic development**

A decline of more than 50% in Ukraine's GDP during the first five years after the end of communism, i.e. from 1992 to 1996, clearly indicates the scale of the country's economic crisis. Because the private sector is to a large extent (30-50%) not officially recorded, since it belongs to the shadow economy, estimates for the development of Ukraine's GDP are not as accurate as figures in OECD countries, but the dimension of the economic crisis is obvious (see Table 2.1).

### ***Inflation finally under control***

The other main problem of the Ukrainian economy was inflation. In 1993 inflation rose to more than 10,000%. This hyperinflation had four main causes:

- release of suppressed inflation from Soviet times;
- a rise in real prices caused by high duties on imports, meant to protect domestic production, and by the price policy of monopolists;
- the government's inflationary monetary policy;
- the extensive dollarisation of the Ukrainian economy.

**Table 2.1: Main economic indicators, 1992-97**

	%					
	1992	1993	1994	1995	1996	1997 <sup>1</sup>
GDP <sup>2</sup>	-13	-14	-24	-12	-10	-5
Annual inflation rate <sup>3</sup>	2,728	10,199	401	182	40	11
Official unemployment rate <sup>4</sup>	0.3	0.4	0.4	0.6	1.3	2.5
Real unemployment rate <sup>5</sup>	—	—	20	20	35-40	35-40

1 Estimates.

2 Average annual change in real GDP as calculated by the Ukrainian Ministry for Statistics.

3 End-year % changes in consumer prices as calculated by the Ukrainian Ministry for Statistics.

4 Officially registered unemployment as % of workforce, annual average.

5 Based on survey estimates according to ILO criteria.

Source: *Ukrainian Economic Trends*; *OECD Economic Outlook*

Whereas shortages lead to rising prices under market conditions, they do not in planned economies. In the Soviet planned economy prices had been set by the state administration and did not reflect scarcity of products. As a result private households in the Soviet Union accumulated large sums of cash, because they were unable to buy the products they desired. When prices were freed after the break-up of the Soviet Union, they reacted to a demand which for a long time had been much higher than supply. This inflationary effect was worsened by the fact that supply was in sharp decline as a result of Ukraine's post-Soviet economic crisis.

Whereas other transition countries started to fight inflation, the policy of the Ukrainian government did the opposite. The introduction of protective customs duties and the promotion of domestic monopolies led to an additional increase in real prices. Russia's far-reaching liberalisation of prices in early 1992 forced Ukraine to change the envisaged course of reforms and to follow the Russian example, since the two countries still had the rouble as common currency. To secure control over the development of domestic prices, Ukraine then left the rouble zone and retained a system of state controlled prices. The result was an annual inflation rate of 2,728% in 1992.

In the following year the situation was worsened further, when the government reacted to rising prices simply by printing more money to pay for wages, subsidies and Russian energy supplies. Ukraine then entered the vicious circle of hyperinflation. Ukrainians lost all trust in their national currency, the karbovanets. Whereas the state was issuing more and more money, fewer and fewer people were interested in obtaining it. In 1993 the Ukrainian population already held more money in US dollars than in the national currency. As a result Ukraine's rate of inflation in 1993 was one of the highest in the world. Ukraine's population lost about 80% of its savings during the period of hyperinflation.

Ukraine began to fight inflation in 1994 with a reduction of the budget deficit and with a tight monetary policy conducted by the national bank under the guidance of Victor Yushchenko. The IMF provided a further incentive for the reduction of inflation by making inflation targets the main criterion for the payment of credits. A



further important step towards macroeconomic stabilisation was taken with the introduction of the grivna (UAH) in summer 1996. The new currency has been fairly stable since its introduction (see Tables 2.1 and 2.2). In September 1997 Ukraine introduced a UAH1.7-1.9 exchange rate corridor for \$1 until the end of 1997. However, in November the National Bank had to abandon the corridor after massive selling in the wake of the Asian financial crisis. Nevertheless, in January 1998 the government announced that a new trading corridor would be set.

**Table 2.2: Dollar exchange rate, 1992-97<sup>1</sup> (six-month averages)**

1992		1993		1994		1995		1996		1997	
II	I	II	I	II	I	II	I	II	I	II	
0.0037	0.0236	0.0723	0.1337	0.5003	1.2767	1.6690	1.8554	1.7965	1.8534	1.8725	
1 100,000 karbovanets or 1 grivna											
Source: <i>Ukrainian Economic Trends</i>											

The main problem endangering monetary stability is the accumulation of huge wage arrears by the Ukrainian state. The government has used the non-payment of wages to state employees as one of its main means to reduce the budget deficit. The resulting wage arrears amounted to some \$2.5bn in mid-1997 (up from \$0.8bn in mid-1996). The wage arrears cause considerable social problems and they cannot be seen as a permanent solution to reduce the budget deficit. But in order to ensure monetary stability the Ukrainian government is likely to repay the arrears only after tax collection has been improved considerably.

### *Economic crisis continues*

Whereas economic reforms succeeded relatively quickly in fighting inflation, it is much more difficult to stop the decline in GDP, caused by the inefficiencies inherited from the Soviet planning system and the absence of market conditions. In addition Ukraine's economy is confronted with two specific problems. The first is the low production of natural resources, especially energy resources. In Soviet times Ukrainian enterprises received oil and gas from Russia for prices less than a tenth of the world market level. As a result Ukrainian enterprises employed energy-intensive methods of production. After the break-up of the Soviet Union these enterprises saw an immense rise in production prices when Russia began to increase its oil and gas prices to the world market level.

The second specific problem of the Ukrainian economy is the existence of an extremely oversized heavy industrial sector. This supplied the whole Soviet Union and has lost much of its market as a result of the collapse of the established trade links and the introduction of competition from foreign producers.

### *Slow reforms in agriculture*

Another sector of the Ukrainian economy which has suffered more than the average in post-Soviet Ukraine is agriculture. Its share in GDP fell from 30% in 1990 to only 19% in 1994. Although Ukraine offers favourable conditions for the growing of

cereals and was once famous for its grain production, the lack of reforms, the employment of outdated technology and the insufficient supply of fuel have greatly reduced yields in Ukrainian agriculture.

The result is a dramatic decline in production. The production of grain, Ukraine's main agricultural product, declined from over 50mt in 1990 to less than 30mt in 1996. The supply of the domestic market is still guaranteed but, since employment in agriculture has remained constant, productivity has declined by about 50% and production prices have been rising accordingly. Moreover, Ukraine has missed the chance to become a major exporter of agricultural products. If Ukraine's production of grain had stood at the 1990 level in 1996, the country could have earned about \$4bn by exporting the surplus.

With fertile soil and a favourable climate, Ukraine's agriculture has considerable potential. However, this potential has not been used so far because of the lack of reforms in agriculture. The most important problems hampering a recovery of Ukraine's agriculture are:

- the organisation of agriculture in over-sized, Soviet-style enterprises (kolkhozy);
- lack of modern machinery;
- lack of fuel;
- lack of a legal framework for agricultural production and trade;
- an inefficient, state regulated marketing system for agricultural products;
- additional regulation of agricultural production and trade by regional administrations;
- high direct and indirect taxes for agricultural enterprises;
- the regulation of agricultural exports through licences and registration until 1996.

A lasting recovery of Ukraine's agricultural production is impossible until these problems are tackled. But the reform of agriculture has so far been prevented by the managers of state agricultural enterprises who are pressing for subsidies instead of reforms and by the communist parties in Ukraine which oppose the introduction of capitalist principles and private ownership of land.

#### ***Competition is still lacking in the Ukrainian economy***

Privatisation is a cornerstone of the transition from planned to market economy. The creation of competitive markets, which reformers hoped to achieve with the privatisation of formerly state owned enterprises, is seen as the best way to improve the efficiency of a country's economy. But the privatisation process started extremely slowly in Ukraine, with only 30 enterprises being privatised in 1992. Because of complicated bureaucratic requirements the privatisation of a Ukrainian enterprise took on average about a year and a half. When the privatisation process nevertheless



gained momentum in early 1994, the communist-dominated Ukrainian parliament reacted by passing new regulations which actually stopped the privatisation.

Under the new president, Leonid Kuchma, the privatisation of state companies was made considerably easier. But the ambitious privatisation targets set by the president were not reached in 1996. Only 13,000 instead of 25,000 small and medium-sized enterprises and only 3,000 instead of 8,000 large enterprises were privatised during that year. Privatisation then speeded up and continued in 1997. Although the Ukrainian parliament is still critical of privatisation, it has limited its resistance and now opposes only the privatisation of companies it considers to be of relevance for the country's national security.

As a result of mass privatisation the private sector now has a share of 40-50% in the Ukrainian economy. But even the economic activities of private enterprises are regulated by the state to a large degree. The state bureaucracy protects a large number of enterprises of supposed social or strategic relevance. For example, instead of creating a functioning health and social security system, the state subsidises industrial enterprises in their running of hospitals or kindergartens. Thus many enterprises still have soft budget constraints as in Soviet times, and the biggest share of their income does not come from the sale of products but from lobbying for privileges and state subsidies. About 75% of all privatised enterprises in Ukraine still need restructuring and 50% are operating at a loss, according to the IMF.

The existence of monopolies, leading to prices above and output below market-clearing levels, also hampers the development of efficient market structures. In 1996 there were some 500 monopolists of national significance. In addition about 1,900 companies had regional monopolies.

### *Foreign trade*

Another important problem for the Ukrainian economy is the collapse of the Soviet market. Because Ukraine's import as well as its export shares are above 40% of GDP, foreign trade is of crucial relevance for the economic development of the country. The deterioration of Ukraine's terms of trade led to a loss of more than 10% of the country's GDP: much of its imports consisted of primary commodities (notably oil and gas) which had standard world prices, to which other ex-Soviet republics quickly raised their selling price; but its exports were manufactures which by their quality could not be realigned with the world price. At the same time Ukraine lost its export markets as a result of foreign competition and the falling demand during the post-socialist transition. In 1994, when Ukraine introduced a tight monetary policy to fight inflation, the resulting revaluation of the currency again worsened the country's terms of trade. On a dollar basis Ukrainian exports became 65% more expensive during 1994-95.

Ukraine's dependence on Russian oil supplies puts a heavy strain on the country's balance of trade (see Table 2.3). More than half of Ukraine's imports consist of gas, oil and oil products. Machinery and equipment, which come second, amount to only 15% of all imports. Ukraine's chief exports are iron ore and metals, but finished products also play an important role, mainly because of Ukraine's low level of wages which makes the country attractive for textile producers from western Europe.

**Table 2.3: Ukraine's foreign trade, 1992-97**

	1992	1993	1994	1995	1996	1997 <sup>1</sup>
Exports (\$m)	11,308	8,618	13,894	14,244	15,547	16,000
of which: to FSU (%)	47	64	56	54	57	56
Imports (\$m)	11,930	11,118	16,469	16,964	19,843	21,000
of which: from FSU (%)	54	75	69	65	65	62
energy (%)	22	52	46	55	52	50
Balance (\$m)	-622	-2,501	-2,575	-2,702	-4,296	-5,000

1 Estimate

Source: *Ukrainian Economic Trends*

As a result of the trade deficit accumulated during the past five years, Ukraine has a considerable external debt. The main creditor is Russia, which has received only partial payment for its energy supplies to Ukraine. The second important creditor is the IMF, which is providing financial help for the balancing of the state budget. In August 1997 the IMF approved a one-year stand-by credit of \$542m for Ukraine. The credit is designed to finance a programme which limits the consolidated budget deficit to 4.5% of GDP in 1998. However, a \$2.5bn-3bn long-term loan was put on hold by the IMF in spring 1997 on the grounds that economic reforms in Ukraine were not moving fast enough. The one-year stand-by credit, therefore, was the result of a compromise, typical of the problems connected with Ukraine's economic policy of muddling through.

The main problem of Ukraine's external debt is not its absolute amount, which is relatively low with a value of about a third of Ukrainian GDP, but the fact that the debt is spent on consumer goods and on state subsidies but not on investments which would increase the international competitiveness of Ukrainian exports.

### ***Social problems***

Ukraine's economic problems have dramatic social consequences. The purchasing power of average wages went down from \$229 a month in 1992 to \$161 a month in 1994. Since 1995 it has been rising slightly, to about \$190 in 1997. The average wage stood at \$90 a month in mid-1997. But many workers do not receive wage payments punctually and sometimes they do not receive part of their wages at all. By August 1997 the total amount of wage arrears reached £2.7bn. Apart from actions by the Donbas miners, this has not led to big strikes or protest actions since most workers nevertheless are afraid of losing their job. Instead 70% of the workers have additional incomes, mainly from work on their own plots of land (often by a dacha) or from working in such occupations as taxi driver or small-scale trader.

Whereas the official rate of unemployment lies below 3% of the workforce, a realistic estimate would be 35-40% (see Table 2.1). Since many people are not eligible for unemployment benefits, they either do not bother to become registered as unemployed or have in effect withdrawn from the labour force. The estimate includes those who have been laid off but still have continued access to company benefits, and those on unpaid leave.



## Corruption and organised crime

Ukraine has inherited the problem of widespread and generally accepted corruption from the Soviet period. The Soviet system promoted corruption and could probably only function through it. For example, managers had to break Soviet laws to obtain the supplies they needed to meet the plan worked out by the central economic agencies. Normally they were punished only for underfulfilment of the plan, not for offences against the law. It can be argued that only this flexibility kept the Soviet economy running for so long.

But it was to gain personal advantages as well that the rulers of the Soviet economy embarked on criminal activities. In an economy where nearly everything was scarce almost any manager could make profits through embezzlement. In such a system every manager needed unofficial connections with other managers and with influential state and party officials to conduct his deals and avoid punishment. Under Ukraine's first president the possibilities for the old elites were very much the same as in Soviet times because of the lack of economic reforms. The corruption networks even found a new field of activity with the possibility of securing exemptions from import and export duties through unofficial contacts. This sophisticated form of smuggling ensured immense profits until Ukraine's foreign trade regime was finally liberalised under President Kuchma.

## Business and corruption

However, economic reforms have so far not liberalised economic activities at the micro level. As a result the cost of operating private enterprises according to the law is relatively high since bribes have to be paid to nearly all state officials involved. Senior managers in the new private enterprises are estimated to spend almost 40% of their working hours with public officials in order to negotiate the conditions under which their company can operate (according to a survey of some 50 Ukrainian companies compiled in 1996 through the Ukraine Rapid Enterprise Survey by the Soros International Economic Advisory Group). The survey also gives the average 'unofficial' fee required for different 'favours' (see Table 2.4).

**Table 2.4: Average bribe payment for different 'favours'**

Kind of 'favour'	Payment (\$)	Companies admitting payment (%)
Registration of enterprise	176	66
'Smoothing' regular visit of tax inspector	87	51
Receiving export licence or registration	123	61
Receiving import licence or registration	278	71
Installation of phone line	894	66

Source: Transition (World Bank), 2/1997

Since the bribe necessary to operate an enterprise unofficially is considerably lower than the officially demanded payments from registered enterprises, many domestic

companies have gone into the black economy. Ukraine's black economy is now estimated to amount to between 30% and 50% of officially recorded GDP.

Ukraine ranks sixth as the transition country with the most pervasive corruption. The Wall Street Journal 'corruption score' puts it close to Russia, Uzbekistan and Turkmenistan, but not as bad as Georgia and Tajikistan (as cited by EBRD, Transition Report 1997, p. 39).

### ***Business and organised crime***

Widespread corruption and the huge shadow economy have led to the rise of organised crime. Companies operating unofficially are an easy prey for protection racketeers. These racketeers force regular payments from entrepreneurs through violent threats. Since calling the police would mean the end of his business, the entrepreneur has no alternative but to pay. Thus organised crime has taken over the function of the state in many big cities. Mafia gangs guarantee the security of entrepreneurs in return for regular payments. They can avoid prosecution by spending some of their income on bribing state officials.

Ukraine's organised criminal fraternity, estimated to consist of 400 large gangs, also engages in prostitution, gambling and smuggling. But organised crime cannot be considered to form one vast network. Instead, different Mafia gangs continuously engage in violent clashes in their fight for supremacy.

Whereas this situation is disastrous for many Ukrainian small-scale entrepreneurs, foreign companies are less affected by organised crime. They are treated with more respect since they are more likely to have high-ranking contacts and less likely to accept the demands of the Mafia without complaint. Furthermore, foreign companies normally hire reliable private security services which can frighten off protection racketeers. Corruption, on the other hand, is a much bigger problem for foreign companies since they are thought to be wealthier than Ukrainian firms. Besides, western managers are often less used to the rituals of negotiating the amount of bribes and are, therefore, easy victims, sometimes not even realising that the demanded payment is not part of the regular fee.

### **UKRAINE'S REGIONS**

Ukraine is a unitary state with only the Crimea enjoying political autonomy. Ukraine's regions are, therefore, not as independent as, for example, Russia's. Until 1994 regional presidential representatives controlled many of the activities of the regional governments and gained considerable influence. The new Ukrainian president, Leonid Kuchma, contrary to his campaign promises, further reduced the powers of the regions in 1994-95 by subordinating regional governments to the direct control of the presidential administration and by officially making local assemblies accountable to the president. In order to represent regional interests at the centre, the Council of Regions, composed of the heads of the regional councils, was created. But it was only provided with an advisory function. The new Ukrainian constitution, adopted in 1996, preserves the unitary institutional structure. The only exception is the political autonomy granted to the Crimea.



There are important regional differences in Ukraine's economic development – mainly because of differences in:

- sociocultural background;
- industrial structure;
- political (and economic) leadership;
- relations with the centre (Kiev).

A first rough division can be made between the western and central regions on the one hand and the eastern and southern regions on the other. In the western and central regions of Ukraine, the sociocultural background is marked by Ukrainian nationalism. Agriculture and light industry predominate in the economy of these regions. As a result they were characterised by lower wages and bigger subsidies in Soviet times. Their regional political elites, therefore, favour a centrist state which ensures national unity and continuing subsidies.

**Table 2.5: Ukraine's regions – population, January 1997**

Region <sup>1</sup>	Area (sq km)	Population (‘000)	Urban (%)	Ethnic composition <sup>2</sup> (%)
Crimea <sup>3</sup> (Simferopol)	27,000	2,179	63	64 Russians 24 Ukrainians 10 Tartars
Cherkassy	20,900	1,491	55	91 Ukrainians 8 Russians
Chernihiv	31,900	1,333	58	91 Ukrainians 7 Russians
Chernivtsi	8,100	941	43	71 Ukrainians 10 Romanians 9 Moldovans 7 Russians
Dnipropetrovsk	31,900	3,811	84	72 Ukrainians 24 Russians
Donetsk	26,500	5,125	90	51 Ukrainians 44 Russians

Table 2.5 continues

**Table 2.5: Ukraine's regions – population, January 1997 (cont.)**

Region <sup>1</sup>	Area (sq km)	Population (’000)	Urban (%)	Ethnic composition <sup>2</sup> (%)
Kherson	28,500	1,255	62	76 Ukrainians 20 Russians
Khmelnysk	20,600	1,498	52	90 Ukrainians 6 Russians
Kiev region	28,100	1,880	57	89 Ukrainians 9 Russians
Kiev city	800	2,630	100	73 Ukrainians 21 Russians
Kirovohrad	24,600	1,211	61	85 Ukrainians 12 Russians
Luhansk	26,700	2,743	86	52 Ukrainians 45 Russians
Lviv	21,800	2,750	61	90 Ukrainians 7 Russians
Mykolaiv	24,600	1,332	66	76 Ukrainians 19 Russians
Odessa	33,300	2,567	66	55 Ukrainians 27 Russians 6 Jews
Poltava	28,800	1,723	58	88 Ukrainians 10 Russians
Rivne	20,100	1,192	48	93 Ukrainians 5 Russians
Sumy	23,800	1,384	65	86 Ukrainians 13 Russians
Ternopil	13,800	1,172	44	97 Ukrainians
Vinnitsya	26,500	1,862	48	92 Ukrainians 6 Russians

Table 2.5 continues



**Table 2.5: Ukraine's regions – population, January 1997 (cont.)**

Region <sup>1</sup>	Area (sq km)	Population (’000)	Urban (%)	Ethnic composition <sup>2</sup> (%)
Volyn (Lutsk)	20,200	1,072	52	95 Ukrainians
Zakarpattia (Uzhhorod)	12,800	1,289	39	78 Ukrainians 13 Hungarians
Zaporizhia	27,200	2,059	77	63 Ukrainians 32 Russians
Zhytomir	29,900	1,468	56	85 Ukrainians 8 Russians
<b>Ukraine (total)</b>	<b>603,700</b>	<b>50,894</b>	<b>68</b>	<b>73 Ukrainians 22 Russians</b>
<p>1 If the name of the administrative seat differs from the region's name the former is given in brackets.</p> <p>2 All nationalities accounting for a minimum of 5% of the region's population are given.</p> <p>3 Including the autonomous city of Sevastopol.</p> <p>Sources: F.D. Zastavnyi 1994, <i>Heohrafiia Ukrainy</i>, Svit; Ministry of Statistics of Ukraine, 1997, <i>Ukraine in figures for 1996</i>, Naukova Dumka</p>				

The eastern and southern regions of Ukraine, on the other hand, are marked by strong Russian influences through history and culture. Economically, mining and heavy industry are predominant. These regions are highly industrialised and densely populated. Since the industries of these regions generate the biggest part of Ukraine's GDP, they are expected to contribute considerable tax payments to the central budget. As a result of the russophile past and the relatively favourable economic present of the eastern and southern regions, their political elites were seen as favouring separatism or at least far-reaching political autonomy as regards closer co-operation with Russia.

But the eastern and southern regions have, to a large extent, drifted away from their pro-Russian stance under the presidency of Leonid Kuchma. There are a number of reasons for the change.

- Kuchma won the 1994 presidential elections on a pro-Russian platform and after his election adopted a rhetoric which was less nationalistic than that of his predecessor. Accordingly he is the candidate of moderate pro-Russian Ukrainians.
- The population in eastern Ukraine is still allowed to use the Russian language and seems to have accepted the existence of an independent Ukrainian state, which in fact changes little in everyday life.

- A large part of the outspoken pro-Russian faction in the eastern Ukrainian population has already emigrated to Russia. In 1995 alone there were 180,000 Ukrainian emigrants to Russia.
- Joining Russia does not offer the chance for a real improvement in the economic situation of eastern Ukraine, since comparable regions with heavy industry in Russia suffer from the same problems as eastern Ukraine.
- Kuchma, himself from the eastern Ukrainian region of Dnipropetrovsk, has promoted the region's political elite to influential posts in the central administration and supports regional enterprises. As a result the regional elites of eastern Ukraine have much more influence in Kiev than they would have in Moscow.
- The elites of eastern Ukraine do not pursue a common strategy but weaken their political influence by internal conflicts. This offers the central leadership the possibility of playing off one power group from eastern Ukraine against the other.
- Russia has finally normalised its relations with Ukraine, in the 1997 friendship treaty. It now promotes political and economic co-operation instead of trying to achieve its aims through pressure and destabilising threats.

Hence the eastern Ukrainian population as well as its political and economic elite regard the region as an integral part of the independent Ukrainian state. Pragmatically, they have come to understand that an anti-Ukrainian policy will not serve their aims. Realising that, the Russian leadership has given up its strategy of putting pressure on Ukraine by criticising the alleged discrimination against Russians in Ukraine. As a result pro-Russian forces remain strong only in the Crimea. But with internal quarrels and with Russia's acknowledgement of Ukraine's territorial integrity, Crimean separatism is no longer on the political agenda.

Although the right of economic decision making is firmly placed with the centre, the central government has to consider regional demands. Therefore, the centre's redistributive policy has become a main point of conflict within which the centre is unable to work out a comprehensive system. Rather, it reacts to regional pressures and acute economic crises in haste and without a considered plan. The slow progress of economic reform and the bureaucratic inefficiencies at the centre provide the regions with considerable leeway to conduct their affairs according to their own schemes and to ignore the orders from the centre.

This is exemplified in the privatisation process. Since the regional administration had to present to the centre a list of enterprises suitable for privatisation and since the privatisation process is conducted by the regional administration, the pace of the process largely depends on the support of the regional administration. Progress in privatisation is, therefore, a main indicator of the attitude of a region towards reform. Odessa, for example, tried to start the privatisation of land before it had been officially sanctioned whereas other regions have boycotted the privatisation process altogether (see Table 2.6).



**Table 2.6: Ukraine's regions – economic reforms, 1992-96**

Region	Enterprises privatised <sup>1</sup> (%)	Pace of reform process <sup>2</sup>	State of the economy <sup>3</sup>
Crimea	52	Average	Underdeveloped, corrupt
Cherkassy	65	Below average	Shaken by crisis of agriculture
Chernihiv	79	Average	Shaken by crisis of agriculture
Chernivtsi	69	Below average	Average crisis
Dnipropetrovsk	65	Above average	Recovering, new economic centre of eastern Ukraine
Donetsk	59	Average	Shaken by coal crisis
Ivano-Frankivsk	70	Below average	Affected by crisis of agriculture
Kharkiv	65	Average	Crisis
Kherson	64	Below average	Underdeveloped
Khmelnysk	72	Below average	Affected by crisis in agriculture
Kiev region	83	Above average	Average crisis
Kiev city	78	Above average	Economic centre, but until recently slow with progress
Kirovohrad	59	Below average	Shaken by crisis of agriculture
Luhansk	75	Above average	Shaken by coal crisis, but with successful small-scale privatisation
Lviv	73	Average	Economic centre of western Ukraine
Mykolaiv	78	Above average	Underdeveloped
Odessa	75	Above average	Ukraine's main port, with growing relevance
Poltava	71	Average	Crisis of industry and agriculture
Rivne	75	Average	Shaken by crisis of agriculture
Sumy	71	Below average	Shaken by crisis of agriculture
Ternopil	71	Below average	Shaken by crisis of agriculture

Table 2.6 continues

**Table 2.6: Ukraine's regions – economic reforms, 1992-96 (cont.)**

Region	Enterprises privatised <sup>1</sup> (%)	Pace of reform process <sup>2</sup>	State of the economy <sup>3</sup>
Vinnitsya	68	Average	Shaken by crisis of agriculture
Volyn	69	Below average	Shaken by crisis of agriculture
Zakarpattia	72	Below average	Backward
Zaporizhia	75	Above average	Successful restructuring of industry
Zhitomyr	78	Below average	Shaken by crisis of agriculture
<p>1 Share of non-state enterprises in the total number of large enterprises, 1996 figures. A better indicator for the relevance of the private sector in Ukraine's regional economies is not available.</p> <p>2 According to Osteuropa Institut, Munich, Germany.</p> <p>3 Author's assessment.</p>			
Source: Ukrainian Ministry of Statistics			

Another important point which is responsible for considerable regional differences in Ukraine is the structure of the regional economies. Regional economies based on agriculture (and food processing) are suffering from the lack of reforms in agriculture. Regional economies marked by heavy industry are suffering no less from the crisis in heavy industry. The consequences, however, are likely to be different. Economic reforms are concentrating on the coal industry in eastern Ukraine. Accordingly, the regions of eastern Ukraine are likely to experience a transitional shock with high unemployment, but with the chance of a later recovery. The agricultural regions of western Ukraine, on the other hand, will probably continue to muddle through without escalating social problems but also without the chance of a sound recovery.

The best performing regions are those with a mixed structure to their economy. An example is Odessa, but the economic performance of Kiev city has for some time been hampered by inadequate economic reform. The other relatively good regional economy is Zaporizhia, which has successfully restructured the machine-building sector and attracted considerable foreign investment (see Table 2.7).

## **The Crimea**

### ***Political conflict***

Russian language and culture predominate in the Crimea. The Russian National Movement of the Crimea (RNDK), which was founded in 1991, agitated in favour of Crimean independence, though it did not completely exclude a later reunion with Russia. The movement, led by the former communist deputy Yuri Meshkov and backed by local business elites, was the driving force behind the law 'On the



**Table 2.7: Ukraine's regions – industry, 1996**

Region	Main branches of economy	Industrial production 1990-96 (% change)	Share in Ukraine's total industrial production, 1996 (%)
Crimea	Food, tourism	-54	2
Cherkassy	Agriculture, food	-48	2
Chernihiv	Agriculture, food	-59	2
Chernivtsi	Light industry	-59	1
Dnipropetrovsk	Heavy industry, finance	-57	15
Donetsk	Heavy industry	-54	21
Ivano-Frankivsk	Agriculture, chemical industry	-51	3
Kharkiv	Natural gas, machine-building	-65	5
Kherson	Food	-63	1
Khmelnysk	Food, light industry	-46	2
Kiev region	Food	-43	3
Kiev city	Mixed	-48	4
Kirovohrad	Food	-64	1
Luhansk	Coal-mining, machine-building	-66	8
Lviv	Light industry, chemical industry	-69	3
Mykolaiv	Diffuse	-28	3
Odessa	Mixed	-27	2
Poltava	Fuel, machine-building, food	-48	4
Rivne	Agriculture	-48	2
Sumy	Agriculture	-60	2
Ternopil	Agriculture	-52	1
Vinnitsya	Agriculture	-51	2
Volyn	Agriculture	-71	1
Zakarpattia	Agriculture, tourism	-70	1
Zaporizhia	Machine-building	-23	8
Zhitomyr	Agriculture	-64	1

Source: Ukrainian Ministry of Statistics

sovereign state – the Republic of the Crimea', which was passed by the Crimean parliament in May 1992 and was made subject to a referendum. The Ukrainian government pre-empted the holding of the referendum by granting the Crimea far-reaching autonomy.

After the Crimean presidential elections in 1994 had led to a clear victory for Meshkov, now the candidate of the Russia bloc, the conflict escalated again. But in response to pressure from the new Ukrainian leadership under Kuchma and to the lack of support from Russia, Meshkov downgraded a renewed plan for a referendum to an opinion poll and acted more cautiously – all the more since the Crimea is ethnically divided within itself. The Ukrainian minority is concentrated in the north and has strong links with the centre in Kiev. Moreover, about 10% of the population are Crimean Tartars, who were deported under Stalin and only in the late 1980s returned to the Crimea. The Moslem Crimean Tartars are well organised and exercise considerable political power. Since the 1994 elections they are the biggest opposition faction in the Crimean parliament. Their demands are centred on the assignment of land, on financial assistance and on political and cultural autonomy. They see Kiev as their ally against pressure from the pro-Russian forces.

Political infighting within the pro-Russian bloc further weakened the Crimean leadership in its power struggle with the centre in Kiev. In March 1995 the Ukrainian government suspended the Crimean constitution, annulled the president's post and imposed temporary rule from the centre. Under pressure from the centre a new Crimean constitution was worked out and in late 1995 was adopted by the Crimean parliament. In 1996 Ukraine's new constitution confirmed the status of the autonomous republic of the Crimea as an integral part of Ukraine and again codified Crimea's far-reaching autonomy.

Since May 1997, when the Russian president formally acknowledged the territorial integrity of Ukraine, Crimean separatism is no longer on the political agenda. The Crimean leadership is now attempting to increase the region's political and cultural autonomy within Ukraine. In October 1997 Crimean lawmakers voted to make Russian the official language of the autonomous republic until more people have learned Ukrainian.

### *Economic problems*

Another problem remains. The unstable political situation has made the Crimea a stronghold for corruption and organised crime. The majority of the population believe that the peninsula, which has already been labelled the Ukrainian Sicily, is firmly under the control of the Mafia. The lack of control from the centre was used by the Crimean leaders to exploit the economic potential of the autonomous republic for their personal benefit. The political leaders under Meshkov privatised profitable tourism facilities into its own pockets. The reform process, threatening to create an independent class of entrepreneurs and to loosen the leadership's control over the economy, was successfully hampered. The fight over profitable assets soon escalated into open violence. Criminal gangs are said to control a considerable portion of the Crimean economy and to employ small armies to defend their gains. More than 100 contract killings have been carried out in the Crimea since the break-up of the Soviet Union.

As a result of this situation the Crimean economy remains underdeveloped. The peninsula receives more than three-quarters of its industrial goods and of its water and energy supplies from mainland Ukraine. Industries of relevance are the production of food, especially wine, and of textiles as well as tourism. The standard of education in the Crimea is below the Ukrainian average.

In order to promote economic growth without giving incentives for economic separatism a free economic zone was created in northern Crimea in July 1995. The zone, called Sivash, comprises the towns of Armyansk and Krasnoperekopsk. The free economic zone was granted exemption from nearly all tax payments to the central budget and from import duties. Thus production costs should be decreased to allow for new investments and the improvement of living standards. But the success of the project was limited and Ukraine has been slow to create other free economic zones.

The new hope for the Crimean economy is now to exploit the oil and gas deposits there. With Russia clearly distancing itself from Crimean demands and with the need to attract western investors, the political leadership of the Crimea seems to be acting more cautiously.



## **Dnipropetrovsk**

Dnipropetrovsk is situated in the mainly pro-Russian east of Ukraine. Under President Kravchuk the interests of Dnipropetrovsk were largely ignored. The main aim of the centre, the creation of an Ukrainian national identity, alienated the elites of this region from the national leadership.

The main representative of Dnipropetrovsk's regional elite is Leonid Kuchma, who graduated from Dnipropetrovsk State University and later worked as director of Pivmash, a massive missile production plant near Dnipropetrovsk. His local pre-eminence secured Kuchma election to the Ukrainian parliament in 1990. In 1992 he was appointed prime minister. But in response to pressure from the political opposition he was soon dismissed.

One of the main factors bringing about his dismissal was the conflict with the Donbas regional elite. The Donbas was able to put pressure on the central leadership through its ability to influence the well organised miners' unions. By manipulating the union into extensive strikes, heavy economic pressure was put on the national leadership and as a result Kuchma was replaced as prime minister by the candidate of the Donbas group.

But with Kuchma's victory in the 1994 presidential elections the situation changed completely. Members of the Dnipropetrovsk regional elite were now promoted to high-ranking posts in Kiev. Preferential treatment from the central leadership considerably promotes the development of the region's economy. Dnipropetrovsk has now become home to about 100 financial institutions and the headquarters of a dozen banks, as a centre of finance it is second in importance to Kiev. The Dnipropetrovsk-based Privatbank is one of the wealthiest Ukrainian banks and one of the few banks with a countrywide network of branches. The Dnipropetrovsk-controlled financial group, United Energy Systems of Ukraine, has been made the biggest state licensed dealer for the profitable import of natural gas. The group reportedly had especially good connections with Pavlo Lazarenko, who was Ukraine's prime minister between May 1996 and June 1997. Accordingly, United Energy Systems lost some privileges under the new prime minister, Valery Pustovoitenko, although he, too, comes from Dnipropetrovsk.

## **The Donbas (Donetsk and Luhansk)**

The Donbas is Ukraine's centre of coal mining and of the steel industry. The main towns are the regional capitals Donetsk and Luhansk and the town of Mariupol. The economy of the Donbas is characterised by heavy industry designed for the needs of the Soviet economy. For the economy of independent Ukraine it is extremely oversized. In response to the economic decline of all post-socialist countries and to foreign competition, the heavy industry of the Donbas lost its market to a large degree and entered a deep economic crisis after the dissolution of the Soviet Union. As a result the Donbas is hostile to economic reforms and demands subsidies from the centre.

As Ukraine's main industrial centre, responsible for nearly a third of the country's industrial production, the Donbas has gained a special role in politics through its well-organised miners' unions. As early as 1989 miners' strikes in the Donbas were

one of the main reasons for the resignation of the communist hardliners in the republican leadership. In independent Ukraine the mainly pro-Russian Donbas saw its interests neglected by the co-operation of President Kravchuk with the national movement. When the then prime minister, Leonid Kuchma, tried to start economic reforms, the Donbas saw its economic position endangered, too.

The regional elite of the Donbas co-operated with the miners' unions to foster its political and economic interests. After extensive strikes in the Donbas, Leonid Kuchma was replaced as prime minister by Yukhym Zvyahilsky, at that time mayor of Donetsk and former director of one of the biggest Donetsk mines. In the wake of Zvyahilsky's appointment a number of politicians from the Donbas were promoted to influential posts in Kiev.

But the Donbas elite was pursuing its interests too openly. Growing evidence of corruption and embezzlement of state funds forced Zvyahilsky to resign in June 1994 and later that year he fled prosecution by emigrating to Israel. (He returned in 1997 after the Ukrainian parliament had restored his parliamentary immunity.) When Kuchma won the presidential elections in July 1994 the so-called Donbas clan was pushed out by the regional elite from Dnipropetrovsk. Although the background remains unclear, the power struggle between the rival regional elites turned violent. By the end of 1996 at least 10 prominent representatives of the Donbas elite had fallen victim to contract killers. In summer 1996 the central government used miners' strikes in the Donbas against the regional leadership, by accusing the Donetsk authorities of incompetence and misuse of state funds. Donetsk governor Volodymyr Shcherban was dismissed by President Kuchma. The final blow to the Donbas clan was then the murder of its alleged 'boss', Yevhen Shcherban, in November 1996.

With the loss of financial support from Kiev and with the economic centre of eastern Ukraine shifting from Donetsk to Dnipropetrovsk, the economic crisis of the Donbas worsened. Huge wage arrears amounting to several hundred million US dollars endanger the social position of the miners. And the central government's plan for the restructuring of the coal industry will put a strain on the regional economy far into the next century.

## **Odessa**

Thanks to its three Black Sea ports Odessa has one of the best performing economies of all Ukrainian regions. Odessa started early with economic reforms and was one of the leading regions in the privatisation process. It has attracted considerable foreign investment. In addition, the city of Odessa with its Mediterranean ambience and beautiful beaches has tourism potential for the future.

The region is dominated by its administrative centre, the city of Odessa. The powerful mayor of Odessa, Eduard Gurvits, has been a driving force behind the region's economic development. Under his leadership Odessa was the first place in Ukraine to start the privatisation of land. The further economic development of Odessa, however, depends on the development of cargo volumes at its ports. In recent years traffic has shifted from agricultural products to the export of metals and the import of consumer goods. In the short term Odessa is attempting to take advantage of the thriving trade across the Black Sea. In the long term the city hopes to become a pivot



for the transport of Caspian oil to western markets, although progress with the construction of the relevant oil terminal has been slow.

### **Western Ukraine**

Because of their common historical, cultural, political and economic characteristics, the seven regions (Chernivtsi, Ivano-Frankivsk, Khmelnytsk, Lviv, Rivne, Ternopil and Volyn) that form western Ukraine can be dealt with together.

In western Ukraine, the sociocultural background is marked by Ukrainian nationalism. Nationalist candidates get up to 90% of the vote in elections and the Ukrainian language is dominant not only in the regional state administration but in business and everyday life as well.

Agriculture and light industry predominate in the economy of these regions. The 20% of Ukraine's population who live in the western regions contributed only 14% to the country's industrial production in 1996. Western Ukraine's agricultural production, on the other hand, accounted for 24% of the country's total. Accordingly, western Ukraine has suffered more than the average from the crisis in agriculture.

Since reforms in agriculture have made no progress at all, the general pace of transition has been slow in western Ukraine. The only exception is Lviv, the economic centre of the region. The Lviv area has some industry, especially chemicals (sulphur production), household electronics, vehicles, cranes and conveyor belts, manufacture of ready-to-wear clothing, and food processing, which has been the first to attract a number of foreign investors.

Lviv is also the financial centre of western Ukraine, with more than 100 banks being represented in the region, and is the site of a regional and an international commodity exchange. Established more than 700 years ago, Lviv is the cultural and educational centre of western Ukraine and has 12 institutions of higher education.

But the international economic relevance of western Ukraine lies in its role as a junction for traffic in eastern Europe. The region is close to the borders with Poland, Slovakia, Hungary and Romania and has a developed transport infrastructure. Main railways and highways from western Europe to Russia and the Caucasus and from the Baltics to the Balkan run through the region. Its airport at Lviv is capable of handling transport planes. The main transit pipelines for Russian oil and gas deliveries to central and western Europe also run through western Ukraine.

The southern part of western Ukraine, the Carpathian region with Chernivtsi, Ivano-Frankivsk, Khmelnytsk, Lviv and Ternopil, was an important oil and gas producer in the first half of the 20th century. Independent Ukraine is now trying to revive the oil and gas production in this region with the help of foreign investors.

### **Zakarpattia (Transcarpathia)**

Zakarpattia, separated from the Ukrainian heartland by the Carpathian mountains, belonged to Hungary for most of its history and came to Ukraine only in 1944-45. As a result the region has not only a Hungarian minority, comprising about 13% of the

population, it also has its own cultural identity promoted since the 19th century by the ruthenophile movement. Inspired by the writer Oleksandr Dukhnovych, the movement claimed that the Transcarpathian population forms an ethnically distinct people – the Rusyn or Ruthenes. Their difference from the Ukrainian people is explained by their distinct history and administration, local dialect and separate branch of the Uniate Church.

Today Zakarpattia is the least developed of Ukraine's regions. It contributed a mere 0.5% to Ukraine's industrial production in 1996 and average wages there are the lowest in Ukraine. Though Zakarpattia started early and determinedly with economic reforms, the economic performance of the region has been considerably below average. From 1992 to 1996 industrial production declined by about 70%. The promotion of tourism and the extraction of natural resources are seen as the region's only chance of ending its economic crisis.

## **FUTURE PROSPECTS**

### **No serious external threats to Ukraine's security**

Ukrainian statehood is no longer questioned politically. The existence of an independent Ukrainian state is now an established fact on the European map. All of the country's neighbours have accepted the territorial integrity of Ukraine and have signed treaties of friendship and co-operation. In addition, its regular participation in Nato manoeuvres and the amount of financial aid provided demonstrate the West's interest in Ukraine and further strengthen the country's position in foreign policy.

An external threat to Ukraine's security could arise only from the Crimean issue. Russian nationalists still claim that the peninsula belongs to Russia. But with the solution of the Black Sea fleet issue they will find it difficult to keep the conflict alive. The Russian leadership obviously considers the Crimean question settled and the pro-Russian forces in the Crimea have lost their influence. If the conflict is brought up again at all, it is likely that the discussion will be limited to the status of the city of Sevastopol, where the Russian part of the Black Sea fleet has its base. Though such a scenario would give rise to considerable political tensions, it would in no way endanger the external or internal stability of the Ukrainian state.

### **Relations with Russia are likely to remain tense**

The fact that Ukraine's external security is not threatened does not mean that relations with Russia will be smooth in the future. First, Russian politicians have often reacted with threats to Ukrainian attempts to develop closer contacts with the West. Nato expansion eastward might again provoke such a reaction. Second, the compromise reached between Russia and Ukraine with the friendship treaty of May 1997 is popular neither with Russian nor with Ukrainian nationalists. Since nationalists occupy a strong position in both countries, politicians in both countries might try to prove their national credentials by provoking a worsening of Russian-Ukrainian relations. In such a case the Ukrainian debts for Russian energy supplies, the situation of ethnic Russians in Ukraine, the Crimean issue and the implementation of the



friendship treaty could become the main points of conflict. In summary it may be said that the external security of Ukraine is not threatened; however, relations with Russia are likely to be characterised more by conflicts, though limited ones, than by co-operation.

### **Internal political stability not endangered**

Internally, furthermore, the territorial integrity of Ukraine is no longer seriously questioned. Under President Kuchma, Ukraine succeeded in integrating the Russian population of its eastern and southern regions into the Ukrainian national state. The pro-Russian groups lack a distinct and common identity and are, therefore, unable to act as a cohesive political force. This fact is highlighted by the conflict between the regional elites of the Donbas and Dnipropetrovsk. Because of its economic potential, eastern Ukraine always had considerable political influence in Kiev – much more than it would have in Moscow, where it would face competition from many industrial centres. That is why the regional elites of eastern Ukraine are mainly interested in strengthening their position in Kiev, thus ensuring subsidies and privileges for their regions. Ethnic issues are not on their political agenda.

An exception to this pattern is the Crimea, where pro-Russian forces were in an unquestioned majority. As a result the Crimean question was the biggest danger to Ukraine's internal political stability. But Kiev's policy of carrot and stick, guaranteeing far-reaching autonomy but cracking down on separatism, was finally able to integrate the Crimea firmly into Ukraine. The pro-Russian forces of the Crimea are weakened and shaken by political infighting. Therefore it is not likely that their demands will again gain political momentum. Protests against the signing of the Russian-Ukrainian friendship treaty, which declared the Crimea to be part of Ukraine, attracted only a few hundred demonstrators in May 1997.

### **Power struggle over economic reforms will continue**

With the political consolidation of the Ukrainian national state, the economic situation of the country becomes the main problem for its internal stability. The main hindrance to consistent economic reforms in Ukraine is the parliament with its majority of communists and nationalists. The parliament has blocked many of the president's reform attempts and it has drawn up its own alternative versions to the presidential reform projects. As a result Ukraine has contradictory legislation on many issues. There are, for example, two different legal acts on leasing. The privatisation process as designed by the president was hampered several times by parliamentary bills which contradicted the existing legislation on privatisation. The passing of the 1997 budget, a key condition for an urgently needed further loan from the IMF, was only achieved in June 1997. Thus the struggle between president and parliament considerably harms Ukraine's international reputation and the progress of reform.

Parliamentary elections are scheduled for March 1998. But it is highly unlikely that pro-reform parties will be able even to get close to gaining a majority. It can therefore be expected that the Ukrainian parliament will work against the implementation of economic reforms right into the next century.

On the other hand, Kuchma is likely to be re-elected as Ukrainian president in October 1999. He held the lead in all opinion polls conducted in summer 1997. Moreover, the opposition to Kuchma is divided between nationalists and russophile communists. This fact will determine Kuchma's election campaign. The Ukrainian president will be elected in two rounds. The two candidates who gain the most votes in the first round will stand for election in the second. If Kuchma's opponent in the second round is a communist, the most likely scenario, then Kuchma will attract the votes of moderate nationalists as the lesser of two evils and thus win the election. If his opponent in the second round should happen to be a nationalist, Kuchma will gain the votes of moderate communists.

Accordingly his chances of victory are best as candidate of the political centre, and that is why Kuchma is likely to pursue a pragmatic policy for the rest of his term. That means he will try to strike a balance between nationalist and pro-Russian demands and implement only moderate economic reforms. The present administration, marked by the conflict between an anti-reformist parliament and a pragmatic pro-reform president, is likely to dictate the course of economic reforms for the next several years. Ukraine will continue to muddle through.

### **Moderate economic recovery likely**

But the slowness and incoherence of Ukraine's economic reforms will not necessarily prevent economic recovery of the country, for it is reasonable to expect a moderate recovery in the near future. First, the basic conditions for private economic activity, such as private property rights, liberalised markets and a stable currency, have finally been created. Second, the decline in Ukraine's GDP has been so extreme that the bottom will be reached soon. Third, many of Ukraine's entrepreneurs have been able to adapt to the country's particular environment. There are signs that at least in the shadow economy the recovery has already started. Fourth, Ukraine will profit from the economic recovery already under way in its western neighbours, and especially from economic ties with Poland.

### **A comparison with other post-socialist transition countries**

The difficulty of comparing progress in transition economies is evident in divergent assessments by Freedom House (conducted in 1997 – 25 transition countries in eastern Europe and the former Soviet Union) and by the EBRD (in its annual assessment for mid-1997 of the economic transformation of the same 25 states). Each of the country reports is divided into seven categories, which contribute to an overall judgement of the transition process. The first category – political process – deals with elections, party configuration and popular participation. The second category – civil society – examines the role of civic organisations. The government and public administration index measures legislative and executive transparency as well as government decentralisation, independence and responsibility. An analysis of the situation of the media and of the rule of law are further aspects of the assessment of political reforms. The progress of economic reforms is recorded in the economy index which considers the institutional framework for economic activities, property rights, macroeconomic balance and problems for business activities. The progress of privatisation is given as a separate indicator. To make data easily comparable within and among countries, each of the seven categories is rated on a scale of 1 to 7, with 1



representing the highest and 7 the lowest degree of achievement in each category. The EBRD assessments cover large and small enterprise privatisation and six other indicators – governance and restructuring, price, trade and foreign exchange liberalisation, competition, banking reform and the operation of non-bank financial institutions. In Table 2.8 the EBRD scale of 1 to 4 has been altered to a 1 to 7 range.

Table 2.8: Ranking of political and economic reforms									
Country	Freedom House						EBRD		
	Political process	Civil society	Administration	State of media	Rule of law	Economy	Privatisation	Economy	Privatisation
Ukraine	3.25	4.00	4.50	4.50	3.75	4.25	4.25	4	4
<i>For comparison:</i>									
Belarus	6.00	5.25	6.00	6.25	6.00	6.00	6.00	5	5
Russia	3.50	3.75	4.00	3.75	4.00	4.00	3.00	3	2
Poland	1.50	1.25	1.75	1.50	1.50	1.75	2.25	2	2
Note: Ranking is on a 1-7 scale, with 1 representing the highest degree of achievement.									
Source: Transition (World Bank), 3/1997; EBRD, <i>Transition report 1997</i> , p. 14 (large-scale privatisation indicator and average of six marketisation indicators)									

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Detailed up-to-date information on Ukraine's regions can be obtained from the regional state administrations (note: the international telephone country code for Ukraine is +380).

- |                  |  |
|------------------|--|
| Crimea:          | The Government of the Autonomous Republic of Crimea,<br>Kirov St. 13, 333005 Simferopol<br>Tel: 652 276165<br>(Sevastopol City State Administration, Lenin St. 2, 335000<br>Sevastopol<br>Tel: 692 523660) |
| Cherkassy:       | Regional State Administration, Shevchenko St. 185, 257001<br>Cherkassy<br>Tel: 472 473333  |
| Chernihiv:       | Regional State Administration, Lenin St. 18, 250000 Chernihiv<br>Tel: 4622 75023   |
| Chernivtsi:      | Regional State Administration, Radyansky St. 1,<br>273010 Chernivtsi<br>Tel: 3722 23010  |
| Dnipropetrovsk:  | Regional State Administration, Kirov St. 2, 320004<br>Dnipropetrovsk<br>Tel: 562 933571  |
| Donetsk:         | Regional State Administration, Pushkin St. 34, 340105 Donetsk<br>Tel: 622 933571   |
| Ivano-Frankivsk: | Regional State Administration, Hrushevsky St. 21,<br>284004 Ivano-Frankivsk<br>Tel: 3422 22291   |
| Kharkiv:         | Regional State Administration, Derzhprom, entrance 8,<br>310022 Kharkiv<br>Tel: 572 432105   |
| Kherson:         | Regional State Administration, Svobody St. 1, 325000 Kherson<br>Tel: 5522 23050  |
| Khmelnysk:       | Regional State Administration, Nazalezhnosti St. 1, 280005<br>Khmelnysk<br>Tel: 3822 65025   |
| Kiev region:     | Regional State Administration, L. Ukrainka St. 1, 252106 Kiev<br>Tel: 44 2261510   |



Kiev city:	City State Administration, Khreshchatyk St. 36, 252044 Kiev Tel: 44 2212333
Kirovohrad:	Regional State Administration, Kirov St. 1, 316022 Kirovohrad Tel: 522 240330
Luhansk:	Regional State Administration, Heroiv Velykoi Vitchyznyanoi Viyny St. 3 348000 Luhansk; Tel: 642 527019
Lviv:	Regional State Administration, Vynnychenko St. 18, 290601 Lviv Tel: 322 728093
Mykolaiv:	Regional State Administration, Lenin St. 1, 327009 Mykolaiv Tel: 512 352270
Odessa:	Regional State Administration, Shevchenko St. 4, 270032 Odessa Tel: 482 251547
Poltava:	Regional State Administration, Zhovtneva St. 45, 314000 Poltava Tel: 5322 73573
Rivne:	Regional State Administration, Prosvita St. 1, 266000 Rivne Tel: 362 264788
Sumy:	Regional State Administration, Nezalezhnosti St. 2, 244030 Sumy Tel: 542 224649
Ternopil:	Regional State Administration, Hrushevsky St. 8, 282021 Ternopil Tel: 3522 20788
Vinnitsya:	Regional State Administration, Lenin St. 70, 286000 Vinnitsya Tel: 432 322035
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## CHAPTER 3: ENERGY IN UKRAINE – AN OVERVIEW

### ENERGY BALANCE AND BASIC PROBLEMS

The decline of the Ukrainian energy sector took place mainly from 1990 to 1995. In this period domestic production and net imports of energy resources contracted dramatically (see Table 3.1). The decline in domestic production is mainly the result of unfavourable geological conditions and of the fact that new deposits were not developed in Soviet times, since the Soviet leadership concentrated on energy resources in Siberia and central Asia. That is why Ukrainian efforts to increase domestic production of oil and gas will have little effect on the country's energy balance until the year 2000. Ukraine's oil and gas imports declined primarily because suppliers (Russia and Turkmenistan) increased prices to world market levels between 1990 and 1995.

**Table 3.1:**  
**Supply of energy resources to Ukraine's domestic market,**  
**1990, 1995 and 2000**

	1990	1995	2000 <sup>1</sup>
All primary energy resources (mtce)			
Domestic production	167	104	158-167
Net imports	220	106	130-141
<b>Total supply</b>	<b>387</b>	<b>210</b>	<b>288-308</b>
Coal (mt)			
Domestic production	165	84	90-100
Net imports	1	14	9-15
<b>Total supply</b>	<b>166</b>	<b>98</b>	<b>99-115</b>
Oil (mt)			
Domestic production	6	4	4
Net imports	51	27	26-32
<b>Total supply</b>	<b>57</b>	<b>31</b>	<b>30-36</b>
Gas (bn cubic metres)			
Domestic production	30	18	20
Net imports	88	62	60-65
<b>Total supply</b>	<b>118</b>	<b>80</b>	<b>80-85</b>

1 Forecast by Institute of Economy, Ukrainian Ministry of Economy (net imports) and by the Ukrainian Ministry of Coal Industry and Ministry of Statistics (production).

Source: European Commission (Takis) 1997, *Business guide to the energy sector of Ukraine*; Ukrainian Ministry of Coal Industry and Ministry of Statistics

Whereas, on the one hand, the dramatic decline of the Ukrainian economy was a reason for the declining energy demand, on the other hand the shortage of energy worsened the economic crisis in Ukraine. Accordingly, President Leonid Kuchma even claimed that over 80% of the fall in economic production was attributable to



insufficient energy supplies to industry and agriculture. In winter, gas for the heating of homes is regularly rationed. As a result, total fuel consumption in Ukraine fell by 35% from 1990 to 1995. Electricity consumption declined by some 30% and district heat by more than 35% (see Table 3.2). In 1996 total domestic energy consumption was 66.7% of that of 1990 (*Ukrainian Economic Trends*, September 1997, p. 8). The consumption of gas, and in many regions the consumption of electricity also, has been limited by supply side factors. This means that demand for energy in Ukraine exceeds consumption. However, demand is not satisfied because domestic producers and foreign suppliers fail to make deliveries. On the other hand, the demand is only partly backed up by the necessary funding. From 1995 until mid-1997 Ukraine's private gas importers accumulated a debt of \$700m; and domestic customers owed \$1.5bn to Ukraine's electricity producers in mid-1997. Closing the energy gap by increasing supply is, therefore, clearly unrealistic.

**Table 3.2: Energy consumption in Ukraine, 1990 and 1995**

	Year	Fuels (mtce)	Electricity (bn kWh)	District heat (PJ)
Total consumption	1990	283	271	1,848
	1995	181	191	1,149
Of which:				
Industry and construction	1990	231	152	1,130
	1995	129	90	659
Transport	1990	5	15	36
	1995	7	10	24
Agriculture	1990	5	19	58
	1995	3	15	45
Services and residential sector	1990	41	45	446
	1995	38	45	390

Source: European Commission (Takis) 1997, *Business guide to the energy sector of Ukraine*

But since energy intensity remains high in Ukraine, energy-saving measures offer a huge potential for reductions in demand and can help to balance demand and supply on the Ukrainian energy market. The per capita energy consumption in Ukraine equates to the average of OECD countries although economic production in Ukraine is considerably lower. Accordingly Ukraine needs about six times more energy for the production of one unit of its GDP than the OECD countries (EBRD figures for 1995).

The high energy intensity in Ukraine is the result of three main factors. First, the Ukrainian state is still subsidising energy supplies to Ukrainian customers. This leads to a lack of incentives to save energy. Second, the outdated technology employed in Ukrainian industry leads to inefficient energy use and resulting higher demand. Third, the statistics on energy intensity are inaccurate since the output of the shadow economy is not included in GDP figures, whereas the energy consumption of the shadow economy is included in the relevant statistics. In fact, the difference between a 50% fall in industrial production and a 30% decline in energy consumption between 1990 and 1995 has already been used as an indicator for the size of the shadow economy. But even if the shadow economy accounts for 50% of Ukraine's GDP (the

highest estimate), Ukraine's energy consumption per unit of GDP still exceeds the OECD average by 300%.

Not only energy use, but also energy production, is highly inefficient in Ukraine because of outdated technology. The production of electricity demonstrates this point perfectly. The official capacity of Ukraine's power plants amounts to 55,000MW but, although peak demand is estimated to be a mere 27,000MW, Ukraine repeatedly experiences a shortage of electricity. As a consequence of the poor state of many old power plants the official capacity is not reached since many blocs do not work at capacity. In addition, the poor state of the transmission network leads to regional breakdowns in electricity supply.

The outdated technology employed in the energy sector also causes considerable environmental damage. The energy sector accounts for about 50% of toxic substances discharged by stationary pollution sources in Ukraine. It is also responsible for more than 40% of Ukraine's atmospheric transmissions and more than 30% of wastewater and solid wastes. Of the total wastes, less than 75% is being collected and only 15% is being recycled. In addition, the outdated state of the country's nuclear power plants causes an environmental risk that is hard to estimate. Forecasts of supply involve a wide range – varying from an increase of between 37% and 47% in Table 3.1 to a decline of between 4% and 11% according to the International Energy Agency (IEA, 1996, p. 51).

## **STATE ADMINISTRATION OF THE ENERGY SECTOR**

In Soviet times the energy sector was administered by the state. The relevant state administration set targets for production, organised delivery of spare parts etc. and determined the sale prices. Accordingly the managers of Soviet enterprises were mere administrators who were not concerned with demand or prices, but were most of the time engaged in negotiations with the state administration and in the search for supplies necessary to meet the plan targets. Moreover, Soviet managers were often more interested in their personal well-being than in the fate of their enterprise and embezzlement was widespread in the Soviet economy. These old Soviet managers, the so-called red directors, with their traditional attitude are still influential in many state enterprises in the Ukrainian energy sector and they are one of the main reasons for the low efficiency of the sector.

In order to increase the efficiency of the domestic energy sector after the break-up of the Soviet Union, Ukraine has to create market conditions in the sector. The first step is the loosening of state control over the economic activities of enterprises through privatisation. The second step is the liberalisation of the energy market to allow free competition and pricing and thereby promote efficient use of resources.

### **Privatisation in the energy sector**

Privatisation in Ukraine has been slow for a long time and started in earnest only in 1995 after the newly elected president, Leonid Kuchma, began to implement his economic reform programme. Privatisation in the energy sector was even slower since the sector is considered to be of special national relevance and the Ukrainian



parliament has, therefore, several times argued that important energy-related companies should remain state property. The privatisation of the national oil company Ukrneft is a good example of the resulting conflicts which have considerably hampered the progress of privatisation in the Ukrainian energy sector.

After two and a half years of administrative proceedings, the plan for the privatisation of Ukrneft was accepted as late as January 1995. A total of 9% of the company's shares were sold to its workers and managers in the first half of 1995. In all, 60% of the company is to be sold to Ukrainian citizens and strategic investors. Ukraine's parliament then decided that some of Ukrneft's subsidiaries could not be privatised because of their national relevance. Since this decision took no account of superior Ukrainian legislation 30% of Ukrneft's shares were nevertheless auctioned to the Ukrainian population in September 1995. But parliament again intervened and declared the auction nul. As a result the majority of the shares auctioned in 1995 were not issued.

The other main state enterprises in oil and gas production, Ukgazprom and Chernomorneftegaz, will not be privatised in the foreseeable future and are to remain wholly state owned into the next century. The privatisation of Ukraine's six refineries, on the other hand, was conducted successfully in 1995/96 and the shares of five refineries are being traded on the country's share market. But the search for strategic investors has so far been without results. Moreover, parliament has tried to block the sale of a stake in the Linos refinery to foreign investors.

The privatisation of Ukraine's electricity producers also started in earnest only in 1995, when thermal and hydroelectric power stations as well as regional electricity distributors were transformed into open joint stock companies and shares were sold to workers and management until early 1997. The shares are now being traded on the country's stock market. In a second step, it is planned to sell a further stake in thermal power producers to strategic investors. But the state will keep at least a 51% stake in all companies. That is why parliament has not opposed the privatisation of electricity companies but has concentrated on hampering the liberalisation of the electricity market. The state will continue to operate all nuclear power plants to bear the cost of operational risks and eventual decommissioning. The national transmission lines with a capacity of 220kV and more will remain the property of a state run company.

The privatisation of the Ukrainian coal industry has not even started yet, mainly because the industry is operating at a loss and unable to attract private investors. To loosen state control, the mines have, therefore, been transformed into more independent economic units, which still belong to the state but are no longer subject to direct government administration.

### **Liberalisation of the energy sector**

Not only has progress in privatisation of energy-related companies been slow, so that the state still holds a majority stake in nearly all companies, but the state also heavily regulates the domestic energy market. As a result of its economic crisis the coal sector is currently still run by the state. The Ministry of Coal Industry allocates resources and subsidies, plays an important role in the determination of wholesale prices and supervises mine construction and research activities. The mines and mining associations were allowed to invest profits made through business activities at

their own discretion to create incentives for better economic performance. However, the fact that nearly all mines are operating at a loss and that state subsidies are much more relevant for the economic survival of mines limits the effect of this facility.

In 1996 the restructuring of the electricity market started with the aim of creating a wholesale market based on competition between power producers and able to ensure the solvency of participants. However, the relevant government programme does not envisage the complete liberalisation of the market. Instead, the state run enterprise Energorynok (Ukrainian and Russian for 'electricity market') will exercise operational control and supervise settlement of accounts between all participants in the market. Wholesale tariffs in the electricity market will still be set by the state, but subsidies are to be reduced.

However, this concept, which has gained the support of the World Bank, means increasing electricity prices and on this ground it was opposed by parliament which declared that rising electricity prices were unacceptable because of their financial consequences for industry and private households. The resistance of parliament thus once again hampered the progress of market reforms in the energy sector.

The most liberalised market in the Ukrainian energy sector is that for oil and oil products. Prices on the market were freed as early as 1994/95. As a result supply is guaranteed for solvent customers and competition, especially between private filling stations, is developing. The gas market, however, remains subject to state regulation. The national gas distribution system is run by the state company Ukgazprom and gas prices for the wholesale market are set by the state. Although the responsibility for Ukraine's gas imports was transferred to private companies in 1995, the Ukrainian state keeps control over gas imports by setting annual import quotas for all traders. Until 1997 gas wholesalers have been permitted to supply gas only to those regions of Ukraine mentioned in their state licence.

### **The present state administration of the energy sector**

Since the state still owns most of the companies in the Ukrainian energy sector, the policy of these companies continues to be influenced by the state. Moreover, the state strictly regulates all markets of the energy sector apart from that for oil and oil products. That means that the state administration still has immense influence on the development of the energy sector and, because of the multitude of tasks it has to fulfil, the state administration of the energy sector is comparatively large and complex. Accordingly, knowledge of the state administration is vital for investment activities in the Ukrainian energy sector.

### ***Coal industry***

The Ukrainian coal industry is managed by the Ministry of Coal Industry which is organised in administrative units responsible for the different tasks of the ministry (production technology, scientific research, machine-building, finance, transport, security and environment, restructuring, marketing, social services, employment etc.).

The restructuring of the Ukrainian coal industry began in late 1996 with the reform of the industry's organisational structure. Of the 257 mines managed by the Ministry of Coal Industry, 46 enterprises accorded the rights of legal entities were founded in the



form of coal production associations or single independent coal mines. They belong to 26 state owned and state controlled holding companies. The holding company Ukruglerestrukturizatsiya is responsible for the closure of inefficient mines.

### *Oil and gas industry*

The State Committee for Oil, Gas and Oil Refining (in Ukrainian: Derzhnaftohazprom, in Russian: Gosneftegasprom) is the supreme state administration responsible for the Ukrainian oil and gas industry. The state committee consists of administrative units responsible for the main tasks of the ministry (foreign economic relations, investment, oil and gas industry, machine-building, oil refining industry, organisational structure and privatisation, scientific research and environment, geological research and so on).

The Ukrainian oil and gas industry consists of the state owned national gas company Ukgazprom (in Ukrainian: Ukrhazprom), the partly privatised national oil company Ukrneft (in Ukrainian: Ukrnafta), the state oil and gas company for offshore production Chernomorneftegazprom (in Ukrainian: Chornomornaftohaz), the state corporation Ukgaz (in Ukrainian: Ukrhaz) which is responsible for local gas distribution, the state oil transit company Ukrtransneft (in Ukrainian: Ukrtransnafta), the association Ukrneftekhimpererabotka (in Ukrainian: Ukrnaftokhimpererobka) which is responsible for the country's six privatised oil refineries and the association Ukrnefteprodukt (in Ukrainian: Ukrnaftoprodukt) comprising a variety of companies and organisations dealing with oil products. The State Committee for Oil, Gas and Oil Refining also supervises the sectoral construction companies, which are united in the association Ukrneftegazstroi (in Ukrainian: Ukrnaftohazbud) and individual research institutions. Foreign economic activities of Ukrainian oil and gas companies are normally organised by the state corporation Ukrzarubezhneftegas (in Ukrainian: Ukrzarubizhnaftohaz).

### *Electricity market*

The non-nuclear power sector is supervised by the Ministry of Power and Electrification (Minenergo). The ministry consists of a number of administrative units (fuel supply, transmission system, power stations, foreign economic activities, investment and foreign credits, scientific research and environment, employment, forms of ownership and so on). The nuclear power stations are managed by the State Committee on Nuclear Power Utilisation (in Ukrainian: Derzhkomatom, in Russian: Goskomatom) and by the national company Energoatom. Responsible for the health and safety aspects of the nuclear sector is the Ministry of Environmental Protection and Nuclear Safety. The ministry safeguards all nuclear materials and installations in Ukraine, supervises the handling of nuclear waste and co-operates with the International Atomic Energy Agency (IAEA). Ukraine's electricity market is regulated by the state enterprise Energorynok. The enterprise manages the despatch system, purchases all electricity generated by large-scale producers, calculates wholesale tariffs and sells electricity to wholesale dealers. The rules for the calculation of wholesale tariffs are set by the National Power Industry Regulation Commission.

The Ukrainian power sector consists of four privatised thermal generating companies, two privatised hydrogenerating companies, five state run nuclear power plants, the

state company Ukrelektroperedacha (in Ukrainian: Ukrelektroperedacha) responsible for interregional electricity transmission and 27 local power distributors.

## CONTACT DETAILS

The telephone country code for Ukraine is + 380. (The initial zero in the numbers below should be omitted when dialling from abroad.) Since Ukraine's postal service is sometimes not, it may be advisable to use the fax or telephone service instead. Details of the regional state administrations are given at the end of Chapter 2.

### Coal industry

Ministry of Coal Industry  
Bogdan Khmelnytsky St. 4  
252001 Kiev  
Tel: 044 228 0372  
Fax: 044 228 21 31

#### *Coal production associations (with 1996 production above 1mt):*

Aleksandriyugol  
Lenin St. 77  
317900 Aleksandriya  
(Kirovohrad region)  
Tel: 05235 53 231

Krasnoarmeiskugol  
Vatutin St. 1  
343116 Dimitrov-2  
(Donetsk region)  
Tel: 06239 60 111

Artemugol  
Lenin St. 13  
338001 Horlivka  
(Donetsk region)  
Tel: 06242 94 107

Krasnodonugol  
Komsomolets St. 5  
349340 Krasnodon  
(Luhansk region)  
Tel: 06435 22 226

Dobropoleugol  
Engels St. 32  
343120 Dobropole  
(Donetsk region)  
Tel: 06277 24 722

Luganskugol  
Lermontov St. 1B  
348000 Luhansk  
Tel: 0642 573 373

Donbasantratsit  
Kosior St. 10  
349306 Krasny Luch/Chervony  
Promin  
(Luhansk region)  
Tel: 06432 33 399

Makeyevugol  
Soviet Square 2  
339000 Makeyevka  
(Donetsk region)  
Tel: 06232 65 040

Donetskugol  
Artem St. 63  
340060 Donetsk  
Tel: 0622 901 907

Oktyabrugol  
Shakhterskaya St. 39  
343716 Kirovsk  
(Donetsk region)  
Tel: 06250 95 309



Pavlogradugol  
Lenin St. 74  
323000 Pavlograd  
(Dnipropetrovsk region)  
Tel: 05672 61 179

Rovenkiantratsit  
Communist St. 6  
349230 Rovenki  
(Luhansk region)  
Tel: 06433 21 553

Shakhterskugol  
Krupskaya St. 20  
343720 Shakhtersk  
(Donetsk region)  
Tel: 06255 73 209

Selidovugol  
Karl Marx St. 4  
342440 Selidovo  
(Donetsk region)  
Tel: 06237 70 713

#### **Oil and gas industry**

Chernomorneftegazprom  
Kirov Prospekt 52  
333000 Simferopol  
Crimea  
Tel: 0652 257 100

Galichina Oil Refinery  
Borislav St. 82  
293720 Drahobych  
(Lviv region)  
Tel: 03244 21 225

Kherson Oil Refinery  
Neftyanikov St. 52  
325009 Kherson  
Tel: 05522 92 251

Kremenchug Oil Refinery  
Svishtovskaya St. 3  
Kremenchug  
(Poltava region)  
Tel: 05336 28 414

Sverdlovantratsit  
Engels St. 1  
349200 Sverdlovsk  
(Luhansk region)  
Tel: 06434 26 233

Torezantratsit  
Engels St. 88  
343740 Torez  
(Donetsk region)  
Tel: 06254 32 414

Ukrzapadugol  
Khmelnitsky St. 26  
392220 Sokal  
(Lviv region)  
Tel: 03257 43 239

Linos Oil Refinery  
349917 Lisichansk  
(Luhansk region)  
Tel: 06451 20 013

MDOP  
Peremogy St. 35/2  
Kremenchug  
(Poltava region)  
Tel: 05366 22 430

Odessa Oil Refinery  
Shkodova Gora  
270041 Odessa  
Tel: 0482 252 260

Prikarpatya Oil Refinery  
Maidanskaya St.  
285700 Nadvirna  
(Ivano-Frankivsk region)  
Tel: 03475 22 219

Scientific-Technical Centre for the  
Exploitation of Natural Resources  
of the Shelf  
Kharkiv St. 3  
Sevastopol  
Tel: 0692 525 072

State Committee for Oil Gas and Oil  
Refining  
Sichovkykh Striltsiv St. 60  
254050 Kiev  
Tel: 044 226 3241  
Fax: 044 211 3010

Ukrgez  
Gonty St. 3a  
252112 Kiev  
Tel: 044 446 6374  
Fax: 044 446 1834

Ukrgezprom  
Bogdan Khmelnytsky St. 6  
252001 Kiev  
Tel: 044 221 9233

Ukrneft  
Nesterovsky Pereulok 3/5  
Kiev  
Tel: 044 226 3422

### Electricity

Chernobyl Nuclear Power Plant  
Kiev District  
Chernobyl  
(Chernihiv region)  
Tel: 044 43 350

Dneproenergo Thermal Power  
Generating Company  
Plotinnaya St. 2  
330006 Zaporizhia  
Tel: 0612 582 360  
Fax: 0612 571 669

Dniprogidroenergo Hydroelectric  
Power Generating Company  
252240 Vyshhorod  
(Kiev region)  
Tel: 044 431 4291  
Fax: 431 4190

Ukrneftegazstroï  
Krasnikh Kossakov St. 23  
252655 Kiev  
Tel: 044 435 6901

Ukrneftekhimpererabotka  
Kudryavsky uzbiz 56  
254053 Kiev  
Tel: 044 212 1216

Ukrnefteprodukt  
Krasnoarmeiskaya St. 2  
252000 Kiev  
Tel: 044 221 5179

Ukrtransneft  
Druzhba section  
Lapinsky St. 12  
Lviv  
Tel: 0322 742 271

Ukrzarubezhneftegas  
Paladin Prospekt 32  
Kiev  
Tel: 044 444 8275

Dnistrogidroenergo Hydroelectric  
Power Generating Company  
275025 Novodnistrovsk  
(Chernivtsi region)  
Tel: 03741 32 033  
Fax: 03741 31 562

Donbasenergo Thermal Power  
Generating Company  
Lenin Prospekt 11  
338001 Horlivka  
(Donetsk region)  
Tel: 06242 42 397

Energoatom National Company for  
Nuclear Power Generation  
Arsenal St. 9/11  
252011 Kiev  
Tel: 044 294 4870  
Fax: 044 294 4838



Institute for Nuclear Research  
Prospekt Nauki 47  
Kiev  
Tel 044 265 3765  
Fax: 044 265 4463

Institute for Thermoelectrics  
Main Post Office a/c 86  
Chernivtsi  
Tel: 03722 44 422

Khmelnitsky Nuclear Power Plant  
281093 Netishin  
(Khmelnitsk region)  
Tel: 0382 33 350

Ministry of Power and Electrification  
Khreshchatik St. 30  
252601 Kiev  
Tel: 044 226 3027  
Fax: 044 224 4021

National Power Industry Regulation  
Commission  
Comintern St. 27  
252032 Kiev  
Tel: 044 271 1321  
Fax: 044 1321

Rovno Nuclear Power Plant  
265921 Kusnetsovsk  
(Rivne region)  
Tel: 0362 62 350

Southern Ukraine Nuclear Power  
Plant  
329530 Pivdennoukrainsk/  
Yuzhnoukrainsk  
(Mykolaiv region)

### **Geology and environment**

Institute for Geological Sciences  
Chkalov St. 556  
Kiev  
Tel: 044 216 9446  
Fax: 044 216 9334

State Committee on Nuclear Power  
Utilisation  
Arsenal St. 9/11  
252011 Kiev  
Tel: 044 294 6529  
Fax: 044 294 4822

Tsentroenergo Thermal Power  
Generating Company  
Comintern St. 27  
252032 Kiev  
Tel: 044 221 4678  
Fax: 044 228 4793

Ukrelektroperedacha  
Comintern St. 27  
252032 Kiev  
Tel: 044 220 5742  
Fax: 044 220 9370

Zapadenergo Thermal Power  
Generating Company  
Svetnitskoho St. 2  
290001 Lviv  
Tel: 0322 422 350  
Fax: 0322 429 241

Zaporozhye Nuclear Power Plant  
332608 Energodar  
(Zaporizhia region)  
Tel: 0612 32 272

Ministry of Environment Protection  
and Nuclear Safety  
Khreshchatik St. 5  
252601 Kiev  
Tel: 044 226 2428  
Fax: 044 293 3913

State Committee for Geology  
Volodymyr St. 6  
252601 Kiev  
Tel: 044 226 2007  
Fax: 044 228 6221

Ukrgeologia  
Volodymyr St. 34  
252601 GSP  
Kiev  
Tel: 044 211 3244

### **Energy saving**

Institute for Problems of Energy  
Saving  
Pokrovska St. 11  
Kiev  
Tel: 044 417 0142  
Fax: 044 417 0737

State Committee for Energy Saving  
Gonty St. 1  
252112 Kiev  
Tel: 044 442 5271  
Fax: 044 446 0409

### **Other state institutions of relevance**

Anti-Monopoly Committee  
Lviv St. 8  
254053 Kiev  
Tel: 044 212 5054  
Fax: 044 212 4805

State Customs Committee  
Politekhnichny St. 4A  
252054 Kiev  
Tel: 044 274 8193

Ministry of Statistics  
Shota Rustaveli St. 3  
252023 Kiev  
Tel: 044 226 2021  
Fax: 044 227 4266

State Property Fund  
Kutuzov St. 18/9  
252133 Kiev  
Tel: 044 295 1274  
Fax: 044 296 6984

National Trade Fairs Centre  
Glushkov Academy Prospekt 1  
252022 Kiev  
Tel: 044 251 9101  
Fax: 251 9126



## CHAPTER 4: FOREIGN INVESTMENT

### REGULATION<sup>1</sup>

It is possible to distinguish the following forms of foreign investment:

- setting up of a company with foreign capital (i.e. foundation of a joint venture with a Ukrainian partner; acquisition of a stake in an existing Ukrainian company as a strategic investor; foundation of an enterprise with 100% foreign participation in the form of a subsidiary company, a branch or a representative office);
- foreign investment based on licences, concessions or agreements on joint activities for the use of land, the extraction of mineral resources or for other economic activities involving the use of state property with restrictions for commercial use;
- portfolio investments.

Foreign investment in Ukraine is first of all regulated by the relevant law ('On the regulation of foreign investments' see above). However, the rules set for foreign investment by international treaties are superior to the regulation given in the Ukrainian legislation. Ukraine has concluded bilateral treaties with a number of countries on protection of foreign investments and on avoidance of double taxation. Only foreign investments which are officially registered are entitled to the guarantees and privileges provided for foreign investments by the Ukrainian legislation and international treaties (see below for details on registration).

As of 30 September 1997:

- treaties on the avoidance of double taxation exist between Ukraine and the following countries: Armenia, Belarus, Canada, Denmark, Estonia, Germany, Hungary, Kazakhstan, Latvia, Moldova, the Netherlands, Norway, Poland, Slovakia, Sweden and the UK;
- agreements with the following countries have already been ratified: Belgium, Bulgaria, China, Finland, Indonesia, Iran, Russia, the US, Uzbekistan and Vietnam;
- agreements with the following countries have been signed: Croatia, the Czech Republic, Lithuania, Egypt, France, Georgia, Italy, Rumania and Turkey;

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<sup>1</sup> The Ukrainian law 'On the regulation of foreign investments' came into effect on 25 April 1996. Foreign investments which already existed at that time may under certain conditions be subject to earlier legislation which was annulled by the new law. That means, for example, that state guarantees for foreign investments registered before 25 April 1996 are more wide-ranging than the guarantees for foreign investments registered after that date. Unless otherwise indicated, the following exposition refers to foreign investments registered in Ukraine after 25 April 1996. This exposition is only a brief and general introduction and can in no way replace the specific advice of a competent lawyer.

- agreements with Austria and Luxembourg (among others) have been initialled;
- agreements with Cyprus, Greece, Malta, Portugal and Switzerland (among others) are being prepared.

### **State guarantees for foreign investments**

The law on the regulation of foreign investments provides a number of guarantees for foreign investments.

- foreign investments cannot be expropriated, the only exception being cases of national emergency in which authorised state institutions may confiscate foreign investments;
- foreign investors are allowed to transfer net profits abroad without hindrance after all taxes and fees have been paid;
- during a period of six months after their investment activity has ended foreign investors are allowed to transfer abroad all their investments which were earlier imported from abroad. No customs duties are charged;
- if state institutions do not meet their legal obligations concerning foreign investments, the foreign investor is entitled to compensation including compensation for missed profits and immaterial damage.

If in the future any of these guarantees should be changed by a Ukrainian law, a foreign investor will during a period of 10 years following the change have the right to claim the guarantees provided in the present law.

### **Foreign investment in the privatisation process**

According to the legislation adopted in 1992 foreign investors are permitted to participate in the privatisation process with no special restrictions. In 1994 it was decided that the government or the state institutions responsible for privatisation should issue a special list of state enterprises which could be privatised with the participation of foreign investors. Companies on that list are privatised through tendering. Foreign investors wishing to tender must provide the relevant state institution with an application and an outline describing the action envisaged by the foreign investor (acquisition of a complete privatisation project; acquisition of a major stake in a company or foundation of a joint venture). The legislation does not provide any grounds for discrimination against foreign investors in the tendering process. Responsible for the privatisation process is the State Property Fund.

Foreign investors can also take part in the regular privatisation of small state companies (belonging to group 'A' of privatisation projects) in cases where no Ukrainian buyer for the company has been found.

With the help of Ukrainian financial intermediaries it is possible for foreign portfolio investors to participate in all privatisations as buyers with full rights. The acquired shares of privatised Ukrainian companies will then be held at the foreign investor's



deposit at a commercial bank in Ukraine. The main problem is that the foreign portfolio investor is not given the same right as foreign direct investors to remit capital gains abroad although the remittance of dividends should be covered by Ukraine's adherence in May 1997 to Article VIII of the IMF assuring full current account convertibility.

### **Companies with foreign capital**

A company with foreign capital is defined as one in which foreign investment has a share of at least 10%. The business activities of companies with foreign capital are subject to the general rules set out in the Ukrainian legislation, i.e. the law provides no special concessions for, or restrictions on, companies with foreign capital. However, additional legislation may introduce special regulations for companies with foreign capital. There are also special incentives for companies (with or without foreign capital) which are investing in a free economic zone. (For more information see the profile of the Crimea in Chapter 2.)

Whereas western banks, for example, prefer to set up a representative office or a wholly owned subsidiary when starting operations in Ukraine, foreign investment in the Ukrainian energy sector usually takes the form of a joint foreign-Ukrainian enterprise. This is primarily the result of the special situation in the energy sector.

State regulation of the energy sector promotes the foundation of joint Ukrainian-foreign enterprises or the acquisition of a share in Ukrainian companies by strategic foreign investors. Moreover, the experience and contacts of Ukrainian partners are highly valuable in the Ukrainian energy sector which is still heavily regulated by the state. A joint venture with a Ukrainian company, which in the energy sector is in most cases a state company, facilitates contact with local state institutions and offers better conditions for access to the Ukrainian market.

On the other hand, a western investor should bear in mind that the business environment in Ukraine differs considerably from that in the West. In particular, co-operation with state companies may prove difficult since managements often lack the necessary market orientation. Western companies without experience in the former Soviet Union might, therefore, have serious problems when doing business in Ukraine.

### ***Founding a company***

The three main stages of the foundation of a company with foreign capital in Ukraine are:

- agreement on a corporate charter with the Ukrainian partner;
- provision of the company's capital resources (joint stock);
- registration.

Joint ventures (in Ukrainian: spilny pidpriemstvo – SP, in Russian: sovmestnoe predpriyatie – SP) are normally set up either in the form of a limited liability company (in Ukrainian: Tovarystvo z obmezhenomu vidpovidalnistyu – TOV; in

Russian: Obshchestvo s ogranichennoi otvetstvennostyu – OOO) or in the form of a closed joint stock company (in Ukrainian: Aktsionerne tovaristvo zakritoho typu – ATZT; in Russian: Aktsionernoye obshchestvo zakritovo tipa – AOZT).

At least 10% of the capital resources of the company must be provided by the foreign investor to obtain the status of a company with foreign capital. The minimum amount required for the capital resources (in Ukrainian: statutny fond) is expressed as a multiple of the minimum wage set by the Ukrainian government (at present no more than \$30,000 for any type of enterprise). The company also has to set up a reserve fund (in Ukrainian: rezervny fond or strachovy fond). The minimum amount required for the reserve fund is set at 25% of the value of capital resources. A limited liability company has to pay 5% of net profits into the reserve fund every year. The reserve fund is generally interpreted as a fund meant to balance the company's finances in cases of operating losses. The present Ukrainian legislation, however, does not mention any functions of the reserve fund and the rules for drawing on it are not yet clear. (The only exception is the rule that joint stock companies which guarantee an annual minimum dividend have to pay these dividends out of the reserve fund if net profits are too small to pay the dividends in full.) It is also not clear how a change in the registered capital resources of a company would alter the requirements for the reserve fund.

Financial contributions to capital resources are not subject to any restrictions. The cash deposit can be held in foreign as well as in Ukrainian currency. But contributions to capital resources can also be made in the form of contributions in kind. The Ukrainian partner normally contributes real estate, whereas the foreign investor contributes moveable assets such as machinery. In many cases this is an advantageous solution since the foreign investor can import all contributions in kind duty-free if they are to be invested in the joint stock of a company with foreign capital. In this case the contributions in kind must be intended neither for sale nor for the own consumption of the foreign investor. If the contribution in kind is sold within three years of its import the foreign investor has to pay customs duties according to the declared value of the contribution at the moment of sale. The term 'for the foreign investor's own consumption' is not defined in the law.

It should be kept in mind, however, that certain products, and especially those needed for modernisation of the Ukrainian energy sector, can be imported duty free in any case. A general problem with contributions in kind is the assessment of their monetary value. It is, therefore, highly advisable to put an international auditing company in charge of the assessment.

A company can be registered once a corporate charter has been agreed on by the business partners and some contributions to the capital resources of the company have been made. Registration of a company with foreign capital differs in no way from the registration of other companies. Responsible for registration of companies is the local executive committee of the city or district (in Ukrainian: raion), where the company will have its headquarters. The registration is conducted according to the government decree 'On the state registration of business entities' (29 April 1994). Registration may be refused only if the foundation of the company violates Ukrainian law or if the documents provided for registration are not complete. Otherwise, registration has to be granted within five working days.



Registration is a necessary precondition for the legal conduct of business in Ukraine. To acquire the status of a company with foreign investment, the foreign investment forming a part of the company also has to be registered with the regional state administration. The rules for the registration are set out by the government decree 'On the procedure of the state registration of foreign investments' (7 August 1996). The foreign investor has to provide the regional state administration with documents clarifying the nature of the investment made. (The addresses of all regional administrations are given at the end of Chapter 2.)

### ***Taxation***

All tax breaks for companies with foreign capital were abolished in 1995. A transitional arrangement was made for companies registered before 1995. Since spring 1997 all companies with foreign capital have to pay taxes according to the general tax legislation valid for Ukrainian companies. In order to promote foreign investment, President Leonid Kuchma proposed to restore tax and tariff breaks for foreign investors. However, parliament rejected the proposal in July 1997 with the argument that most foreign investments take place in trade and services and do not help to improve production in Ukraine. It is, therefore, likely that foreign companies which are willing to invest considerable sums in industrial production in Ukraine can expect parliament to legislate to their advantage.

The first example of such preferential treatment came about in September 1997 when parliament voted by a large majority to exempt foreign companies investing more than \$150m in the Ukrainian motor industry from import duties and tariffs for the next 10 years. The decision is designed to benefit the Daewoo Group (South Korea), which is investing in a plant at Zaporizhia. In exchange for the tax exemption Daewoo declared that it will recruit 90% of its workers in Ukraine and contract at least 70% of its parts from Ukrainian companies.

According to the law 'On the tax system' (18 February 1997, latest change: 19 April 1997), there are, in all, 19 national and 14 local taxes and additional compulsory payments to the social and pensions funds. The basic rates are:

- 10% trade tax;
- 20% VAT according to the law 'On value-added tax' (3 April 1997, latest change: 26 September 1997);
- 32% of net wages as contribution to the state pensions fund according to the law 'On payments to the state pensions fund' (26 June 1997) (employees pay 1% of their wage);
- 5.5% of net wages as contribution to social security according to the law 'On payments to social security' (26 June 1997);
- 10% of net wages as contribution to the Chernobyl Fund according to the law 'On the creation of a fund for the realisation of measures to surmount the consequences of the Chernobyl catastrophe and for the social protection of the population' (20 June 1997) (employees pay 3% of their wage);

- 30% tax on profits according to the law 'On taxation of profits of enterprises' (28 December 1994, latest change: 22 May 1997).

The rates for the other taxes are variable. Since local authorities have in the past demanded payment of taxes which are not provided for in the national legislation, the new law on the tax system explicitly states that taxes which are not part of the national tax system of Ukraine, i.e. which are not mentioned in the law on the tax system, do not have to be paid. After all tax payments and other compulsory payments to the Ukrainian state have been made, the foreign investor can transfer his net profits abroad. This is one of the state guarantees for foreign investments provided by the law on the regulation of foreign investments. Transactions in Ukraine's national currency and money transfers abroad ceased to be subject to special restrictions after Ukraine adhered to Article VIII of the statute of the IMF in summer 1997.

The main problem with Ukraine's tax system is its instability. The general law on the tax system passed in February 1997 was already the third version which came into effect since 1991. Moreover, different state bodies passed a number of further pieces of legislation regulating taxation. In early 1997 the government embarked on a tax reform meant to simplify the Ukrainian tax system and to ensure its stability. However, parliament proved unwilling to pass the whole reform package. As a result the Ukrainian tax system is still inconsistent and further changes caused by the struggle between parliament and government are likely. However, the successful implementation of the tax reform package would in the longer run provide Ukraine with a sensible and functioning tax system.

### *Insurance*

When insuring in Ukraine a foreign investor has to consider a number of peculiarities of the insurance market in the former Soviet Union. First, it is highly advisable to choose a local insurance company which co-operates with an international insurer. The non-admitted solution that risks in Ukraine are covered by the general insurance policy of the foreign investor, which is being provided by a western insurance company, leads to considerable problems. The policyholder will have to pay a fine if detected, and if the event insured against should occur it might be necessary to bribe persons involved in the damage assessment. Local insurers which co-operate with international insurance companies are able to offer risk management measures and consulting services. Moreover, local insurers can be less expensive owing to closer contacts and the consequent specific contracts. However, local insurance companies which are not backed up by an international company normally do not have the necessary expertise and the financial capability to deal with bigger risks. Russian insurance companies are only permitted to insure risks in Ukraine if they have a branch there which holds the relevant licence.

Second, a foreign investor has to bear in mind that in Ukraine an insurance policy becomes valid only after the first premium payment has been received by the insurer. The date set for the beginning of insurance in the contract of insurance is of no relevance for the actual start of cover even if agreed otherwise by the parties involved.



Third, the upper limit for payments by the insurance company should the event insured against occur is generally the sum insured. Accordingly, calculation of the premium is also based on the sum insured and not on the probable maximum loss.

Fourth, insurances in the Soviet Union provided only for refunding of the book value, i.e. after a period of five years only 50% of the sum insured would be paid. It is now possible, but not general practice, to offer conditions more advantageous to the insured party. Foreign investors should insist on special agreements guaranteeing higher payments should the event insured against occur.

Fifth, contracts of insurance offered by Ukrainian insurance companies often do not contain regulation for cancellation of the contract. Apart from the fact that this might indicate the insurer's lack of experience, it may have the consequence that the insurer will be able to keep the whole annual premium even if a contract is cancelled before the end of a year.

### ***Lawsuits***

According to the law on the regulation of foreign investments, lawsuits between foreign investors and the Ukrainian state will be decided by the relevant Ukrainian courts if no other regulation is provided for in international treaties. In September 1997 a Chamber of Independent Ombudsmen was created in Ukraine. The chamber may mediate in disputes between foreign investors and government offices to avoid recourse to the courts. The 24 members of the chamber are specialists in Ukrainian and international law and representatives of consulting companies.

If all relevant parties agree, other lawsuits involving foreign investment can be decided by courts of arbitration which have their seat outside Ukraine. Inclusion of a relevant clause in treaties with Ukrainian partners might help to avoid problems with Ukrainian courts. The attitude of the Ukrainian judiciary towards foreign investments is difficult to gauge since the relevant court decisions are not published. One can assume that decisions vary depending on the background of the judge, especially since Ukrainian legislation often leaves considerable latitude.

### **Foreign investments based on licences, concessions or agreements on joint activities**

In the Ukrainian energy sector foreign investments based on licences, concessions or agreements on joint activities take place in the extraction of oil and gas. The extraction of oil and gas requires a state licence. The licence for exploration at the Black Sea shelf is offered only after an agreement on joint activities has been reached with the Ukrainian state company Chernomorneftegaz. (See Chapter 6 for the legislation on oil and gas extraction in Ukraine.)

Registration of all foreign investments not including the creation of a company with foreign capital in Ukraine is regulated by the government decree 'On the procedure of registration of agreements on joint investment activities between Ukrainian companies and foreign partners' (30 January 1997). Registration is conducted by the Ministry of Foreign Economic Relations and Trade and other institutions authorised by the ministry. Registration can only be rejected if the contract for the foreign investment or the aim of the investment does not conform with Ukrainian legislation

or if the Ukrainian partner is subject to sanctions or other restrictions of its foreign economic activities.

### **Portfolio investments**

After the privatisation process gained momentum under President Kuchma, the development of the Ukrainian share market also made progress. (See Chapter 3 for information on the privatisation process in the Ukrainian energy sector.) There are no special restrictions on foreign portfolio investments in Ukraine, i.e. foreign investors act under the same rules as Ukrainian participants in the market, with the only exception being participation in the privatisation process (see above).

The main state agency responsible for the regulation of Ukraine's financial markets is the State Committee for Securities and Financial Markets, which was set up by a presidential decree in 1995. The commission issues the regulation for trading at the country's financial markets. The shares of open joint stock companies (in Ukrainian: Vidkryte aktsionerne tovaristvo – VAT, in Russian: Otkrytoe aktsionernoe obshchestvo – OAO) can be traded on the Ukrainian share market. The country's share market consists of stock exchanges (Ukrainskie fondovye birzhi) and the much more febrile over-the-counter market system (PFTS – Vnebirzhivaya Fondovaya Torgovaya Sistema), which was set up in July 1996. Whereas the stock exchanges had a total turnover of only UAH60m in the first five years of existence, total turnover at the PFTS reached UAH117m in the first year of operation. However, both figures demonstrate the low liquidity of the Ukrainian share market.

Foreign portfolio investors can buy and sell Ukrainian shares through authorised commercial banks and investment companies. Such companies normally charge a fee of about 6% of the invested sum for their services. (See the address section at the end of this chapter for the addresses of Ukraine's biggest banks and investment companies.)

### **Taxation**

According to Ukrainian tax legislation the purchase of securities on the country's financial markets is defined as portfolio investment as long as not more than a 50% share in any single security is acquired. The aim of portfolio investments is the making of profits through dividends (in the case of shares), interest payments (in the case of obligations) and price gains. The taxation of these profits is regulated by the law on taxation of the profit of enterprises as follows.

**Dividends** A joint stock company directly transfers 30% of its dividend payments as profit tax to the state. A recipient of dividends is, therefore, not responsible for the payment of profit tax on income yielded from dividends.

**Interest payments (state securities)** Since July 1997 yields from state obligations are also subject to the 30% profit tax. For yields from other state bonds non-residents only have to pay 15% tax.

**Capital gains** Defined as the difference between purchase and sales price, these are subject to the 30% profit tax. If a portfolio investor sells securities at a loss, the



sum lost will be offset against future price gains from other sales, i.e. the sum of taxable profits will be reduced accordingly.

To avoid the 30% profit tax foreign investors who have the status of non-residents in Ukraine can make their investments from an offshore country. In this case profits from foreign investments will be transferred abroad and they are not subject to the Ukrainian profit tax. Instead only a 15% repatriation tax has to be paid in Ukraine. A number of offshore countries have concluded treaties on avoidance of double taxation with Ukraine, so that no further tax payments will be necessary.

### ***Transferring profits abroad***

Every foreign investor in Ukraine has the right to open bank accounts in foreign and in Ukrainian currency. The foreign currency accounts of foreign investors are handled according to the guidelines of the National Bank of Ukraine. Returns from portfolio investments can be booked on 'L'-type accounts in Ukrainian currency. Money held in 'L'-type accounts can be used for payments on Ukrainian territory (including payments for the purchase of privatisation projects or for the purchase of products meant for export) and for the purchase of foreign currency to transfer it abroad.

Transactions in Ukraine's national currency and money transfers abroad ceased to be subject to special restrictions after Ukraine adhered to Article VIII of the statute of the IMF in summer 1997.

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### **FINANCIAL AND TECHNICAL SUPPORT**

Loans of international financial institutions such as the World Bank or the EBRD have traditionally been excluded from sovereign debt reschedulings and have

therefore enjoyed preferred creditor status. A description of the international financial institutions which are active in the Ukrainian energy sector follows. In addition, the European Union's Tacis programme is listed because it finances a number of projects in the Ukrainian energy sector. Further financial and technical aid is provided by national institutions and programmes of western governments (see the address section at the end of this chapter for details of all institutions and organisations mentioned here and for brief information on other institutions).

### **The World Bank programme**

'The Europe and Central Asia (ECA) Region at the World Bank is in charge of providing loans, guarantees, technical advice, and other services to the transition economies of Central and Eastern Europe and the former Soviet Union. Vice President Johannes Linn manages this Bank unit, which has thus far committed \$20bn to the countries of the region. [...] The less-advanced transition countries [such as Ukraine] have a tremendous need for reconstruction after the collapse of their social safety nets and infrastructure systems. That need will not be fully met in the next 10 years through private sector inflows or domestic resources. Therefore, the Bank will have a role to play in supporting their market-building efforts and access to foreign finance, until their economies can finally be propelled onto a growth path' (quoted from *Transition* (World Bank) 1/1997, pp. 1, 3).

The energy sector is one of the main priorities of the World Bank programme for Ukraine. So far the World Bank has offered loans worth \$731m to Ukraine to finance programmes in the energy sector. Further projects currently being prepared by the World Bank may offer an additional \$1bn in loans for the Ukrainian energy sector (see Table 4.1). The World Bank offers loans only to the governments of member states or in exceptional cases to private institutions which have received a full government guarantee for the loan.

The World Bank sees the restructuring of Ukraine's energy sector as a key condition for the country's economic recovery. Electricity supply is at the core of the problems plaguing industrial production (see Chapter 8). The restructuring of the coal industry is seen as the cornerstone for any structural reform of the Ukrainian industry (see Chapter 5). Moreover, the energy sector receives huge state subsidies and thus contributes to the budget deficit. In addition, the World Bank has pointed out that reform of the energy sector would help to solve the non-payment crisis in the Ukrainian economy.

With these aims the World Bank programme has a considerable impact on Ukraine's economic policy. In fact, the disbursement of World Bank loans depends on the progress of market reforms in the energy sector. When Ukraine fails to implement reform steps, which the World Bank considers to be necessary for the progress of its projects, disbursement of the relevant loans is being stopped. In 1997 the World Bank delayed payment of the second tranche of the coal sector adjustment loan because Ukraine had failed to meet the necessary criteria. In summer 1997 the disbursement of the loan for the electricity market development project was suspended because Ukraine's parliament had voted against an increase in electricity prices.



**Table 4.1: World Bank energy projects in Ukraine, 1995-98<sup>1</sup>**

Project	Board date	Loan (\$m)	Funding for
Hydropower rehabilitation	April 1995	114	Turbines; generators; improved despatch and system control network
Electricity market development	October 1996	317	Fuel and spare parts for power generating companies; metering and other equipment for distributors
Coal sector adjustment	December 1996	300	Economic restructuring of the coal sector
Coal mining improvement	early 1998	100	Mine safety; improvement of coal quality; social projects for miners
Krivoi Rog power plant rehabilitation	mid-1997	179	Rehabilitation investments in coal-fired power plant
Kiev district heating improvement	mid-1997	200	Rehabilitation of district heating system; increase in capacity
Kiev public buildings energy efficiency	early 1998	n/a	Improvement of energy efficiency in public buildings
Sevastopol heat supply improvement	1998	20-30	Rehabilitation of district heating system in Sevastopol (Crimea)
Luhansk power plant rehabilitation	1998	n/a	Rehabilitation investments in coal-fired power plant
Gas transit	1998	200	Rehabilitation of compressor stations and pipelines
Gas distribution	1998	100	Gas meters, pipelines
Dniester pumped storage power plant	late 1997	200	Investments, equipment, institution strengthening
<sup>1</sup> As of October 1997.			
Source: World Bank, Kiev office			

That means that Ukraine's economic policy of 'muddling' through continuously endangers or at least delays the disbursement of World Bank loans. For the World Bank, on the other hand, the payment (or non-payment) of loans is an effective tool for putting pressure on Ukraine's policymakers and to promote market reforms. It is therefore being argued that the publicity sometimes given to World Bank decisions on loans to Ukraine can be better understood as a means of promoting reforms than as a real threat to stop projects.

### **The International Monetary Fund**

On 25 August 1997 Ukraine concluded a stand-by arrangement with the IMF for SDR398.92m (\$546m) to expire on 24 August 1998. It followed a similar one-year stand-by arrangement of 10 May 1996 for SDR598m (then \$864m). Ukraine has an IMF quota of SDR997.3m (\$1,366m). Relations with the Ukrainian government are conducted by IMF's European II department, whose director is Mr John Odling-Smee.

### **The European Union's Tacis programme**

'The Tacis Programme is a European Union initiative for the New Independent States and Mongolia which fosters the development of harmonious and prosperous economic and political links between the European Union and these partner countries. Its aim is to support the partner countries' initiatives to develop societies based on political freedoms and economic prosperity. Tacis does this by providing grant finance for know-how to support the process of transformation to market economies and democratic societies. In its first six years of operation, 1991-1996, Tacis has committed Ecu2,807m to launch more than 2,500 projects' (quoted from European Commission 1997, *Tacis contract information. Budget 1997*, p.7).

From 1991 to 1995 total Tacis assistance to Ukraine amounted to more than Ecu400m. After the new Ukrainian president, Leonid Kuchma, had started economic reforms in 1995 and secured support from the IMF, Ukraine and the European Commission worked out an estimated programme (Tacis) for 1996-99. The programme was signed in September 1996 and promised to provide Ecu538m for Ukraine.

The energy sector is one of the main priorities of the Tacis programme in Ukraine. In 1996-97 the energy sector received about Ecu15m out of a total of Ecu67m provided for Ukraine by Tacis. The programme covers all spheres of the Ukrainian energy sector (see Table 4.2).

Companies and organisations from the European Union and the former Soviet Union can apply to tender for Tacis projects. The tender is organised by the European Commission. The Commission does not give a deadline for receipt of applications, but publishes a monthly list of projects still open. However, the Commission does not offer all projects for tender but sometimes prefers to contact potential contractors directly.



**Table 4.2: Tacis programme in Ukraine – energy and environment, 1996-97<sup>1</sup>**

Project	Announced	Duration	Cost (Ecu m)	Main components
Inogate	April 1996	48 months	12.0	Modernisation of gas and oil pipelines; staff training and provision of expert services
Nuclear safety 1997 (Ukraine)	July 1996	–	18.4	Scientific and technical support; on-site assistance to four nuclear power plants
Addressing the clean-up and the secondary medical effects of the Chernobyl disaster	Dec. 1996	24 months	1.5	Research studies
Assistance in establishing a natural gas market in Ukraine	Dec. 1996	24 months	1.5	On-site training for local operators; drawing up of guidelines for economic activities in the gas market
Saving and energy efficiency in the chemical industry	Dec. 1996	18 months	1.8	Pilot project at the Sumy Chemprom Association
Support to address the social impact of coal restructuring in the Donbas region	Dec. 1996	24 months	3.0	Training of local counsellors and business advisers
Support to the Ukrainian government in setting up an energy-saving financing scheme	Dec. 1996	24 months	3.0	Development of a company to finance energy-saving measures
EU-Ukraine partnership on know-how transfer for coal sector restructuring in the Donbas area	March 1997	n/a	2.0	Provision of expert advice and technical assistance; management training; promotion of international co-operation

Table 4.2 continues

**Table 4.2:**  
**Tacis programme in Ukraine – energy and environment, 1996-97<sup>1</sup> (cont.)**

Project	Announced	Duration	Cost (Ecu m)	Main components
Strengthening energy management training actions throughout Ukraine	May 1997	24 months	1.5	Development of a network of at least five regional training centres
Development of an energy plan for Crimea	May 1997	n/a	1.5	Provision of expert advice
Power sector reform: support for accounting, billing and collection systems	May 1997	18 months	2.5	Provision of expert advice; training programmes; pilot project
Inogate: complementary feasibility studies	July 1997	n/a	1.0	Feasibility studies for the transport of Caspian oil and gas
1 As of August 1997; only projects worth at least Ecu1m are given.				
Source: European Commission: <i>Tacis contract information</i>				

## **The European Bank for Reconstruction and Development**

### **The EBRD**

'is a multinational institution set up with the specific aim of assisting the countries of central and eastern Europe to develop into market-orientated economies. Its 59 shareholders include countries from both this region and the rest of the world, plus the European Union and the European Investment Bank. [...] In relation to private commercial banks, the EBRD's main advantage lies, as a result of its shareholder base, in its willingness and ability to bear risk. This allows the Bank to act at the frontier of commercial possibilities and to be an effective "demonstrator". While its structure is unlike that of a commercial bank, the EBRD has a similar approach to dealing with projects and it prices its products on a commercial basis. With its AAA credit ranking the Bank is able to raise funds at the finest rates from the international capital markets' (quoted from European Bank for Reconstruction and Development, *Financing with the EBRD*, p. 3).

From 1992 until 1996 the EBRD approved 20 investments in Ukraine worth Ecu794m. The Bank's first investment in the Ukrainian energy sector took place in 1995, and only in 1997 did the Bank start to pay closer attention to this sector (see Table 4.3).

The EBRD encourages prospective borrowers to approach it at an early stage of a project. As a guideline, the standard minimum lending requirement for the EBRD is



Ecu5m. When lending to private commercial enterprises the EBRD does not normally require guarantees from the host government. The basis for providing a loan is the cash flows of the project and the ability of the project to repay the loan according to the agreement. The EBRD also makes equity investments. However, in this case it expects an appropriate return on its investment, it will have a clear exit strategy and it will only acquire a minority stake. The EBRD may help borrowers to gain access to financing through the provision of guarantees.

**Table 4.3: EBRD projects in the Ukrainian energy sector, 1995-98<sup>1</sup>**

Project	Approval date	Bank funds	Funding for
Poltava oil and gas extraction	April 1995	\$8.2m	British-Ukrainian joint venture Poltava Petroleum Company
Power sector	Dec. 1995	\$57.6m	Maintenance of thermal power stations; purchase of equipment for the electricity wholesale market
Gas meter financing	July 1997	Ecu64.5m	Purchase and installation of gas meters
Kiev district heating rehabilitation	early 1998	Ecu102m	Rehabilitation of the transport and distribution district heating grid of Kiev
Gas transit	early 1998	Ecu138m	Maintenance of the gas transit pipelines
Krivoi Rog power plant rehabilitation	early 1998	Ecu258m	Rehabilitation of three units
<sup>1</sup> As of August 1997			
Source: EBRD information, January 1997; <i>Procurement Opportunities</i> (EBRD) August 1997			

### **National government agencies and programmes**

All western states have developed institutions and programmes to promote investment activities of domestic companies in developing countries and, since the early 1990s, in transition countries as well. Investments in Ukraine are normally eligible for this state support. There are four main components of such state support:

- export guarantees are usually offered by special export credit agencies. They secure exports against economic and political risks. Only certain exports of special national or bilateral interest are eligible for state insurances. Moreover, there is normally a percentage excess of at least 10%;

- investment guarantees secure investments in foreign countries against political risks. Only those investments are eligible which enjoy a certain legal protection in the country where they are made. (The required legal protection is often provided by bilateral treaties.) There are often preferential conditions for investments in the oil and gas sector;
- credit guarantees are state guarantees for credits offered to foreign debtors by domestic lenders. A joint venture or a Ukrainian subsidiary of a western company may be eligible for such state guarantees which may considerably facilitate the financing of projects;
- special support programmes for investments abroad (including, e.g., consultation, technical support, credits) are offered by some states in relation to investments in special countries/sectors or for foreign investments by small companies.

## TRENDS IN FOREIGN INVESTMENT

The list of obstacles to foreign investment in Ukraine is formidable, the most important being:

- legal and regulatory instabilities;
- cumbersome and ambiguous tax laws, customs regulations and specialised licensing procedures;
- time-consuming and non-transparent bureaucratic procedures concerning business activities;
- widespread corruption among state officials;
- increasing administrative, policy and regulatory control;
- unreliable judiciaries;
- relatively high tax burden;
- fragile banking system;
- underdeveloped infrastructure.

The macroeconomic stabilisation achieved under President Kuchma in 1995/96 has created at least one important precondition for foreign investment. The other necessary precondition, a stable situation at the micro level has not yet been achieved. The business environment for foreign investors in Ukraine is still marked by unpredictable changes in regulation, by widespread corruption and by often unreliable and insolvent Ukrainian business partners.

In spring 1997 Richard Morningstar, the US State Department's chief co-ordinator of assistance to the newly independent states declared that the US views Ukraine's



problems as setbacks that can be overcome. But he also warned that the US might cut back some aid programmes if Ukraine continued to mistreat American companies and failed to tackle problems of crime, corruption and stalled economic reforms. Shortly before Morningstar's speech the US telecommunications giant Motorola had announced that it was leaving Ukraine because of red tape and obstacles to foreign investment.

Nevertheless, as a result of the first attempts at economic reform, foreign investment in Ukraine increased by 50% from 1995 to 1996 and this trend continued in 1997. Despite this increase, however, total foreign direct investment since independence stood at a mere \$1.6bn in mid-1997 (i.e. \$31 a head). The largest investors were the US (\$315m), Germany (\$166m), the Netherlands (\$160m), the UK (\$131m), Cyprus (\$116m), Russia (\$114m) and Liechtenstein (\$103m). Companies with foreign capital had a share of 3% in Ukraine's GDP in 1996.

Foreign investment in Ukraine has so far concentrated on domestic trade (\$420m), finance and commerce (\$413m), the food industry (\$325), engineering and metallurgy (\$146), construction (\$115m) and the chemical industry (\$111m).

After macroeconomic stabilisation was achieved in 1996 the Ukrainian leadership started to concentrate on the need to promote foreign investment. It is hoped that foreign investment will make an important contribution to the modernisation of the Ukrainian economy. Accordingly, Ukraine initiated a more favourable business environment for foreign investment. The government worked out a tax reform package designed to create a sensible and stable tax system. In March 1997 an Advisory Board on Foreign Investments was created. The board is headed by President Kuchma and includes leading Ukrainian politicians and the heads of Ukrainian units of multinational corporations (among them a number of companies active in the energy sector: ABB, International Gas (BP), Mitsui, Nortland Power, Nuovo Pignone (General Electric) and Siemens).

As a result of these efforts a number of foreign companies expressed an interest in increasing their investments. Daewoo invested more than \$150m in Ukraine's motor industry and Shell declared that it plans to invest \$1.5bn in the Ukrainian energy sector.

## **INVESTMENT OPPORTUNITIES IN THE ENERGY SECTOR**

### **Coal**

Coal is one of the sectors of the Ukrainian economy worst hit by the post-Soviet economic crisis. The only opportunity for foreign investments in the Ukrainian coal sector is participation in programmes for the restructuring of the coal sector financed by international financial organisations and the Ukrainian state. In such a case international financial organisations guarantee payments and create a more favourable business environment (see Chapter 5 for details on the coal sector).

## Oil and gas

In 1996/97 interest in the Ukrainian oil and gas sector increased considerably. For foreign investment the sector has two main advantages compared with other spheres of the Ukrainian economy. First, Ukraine is interested in the development of the sector to reduce economic dependence on Russia. As a result, foreign investment in the sector is being promoted by the state. Second, international financial institutions are active in the sector.

Nevertheless, the situation for foreign investment in the Ukrainian oil and gas sector does not differ much from the general situation. Whereas some foreign companies tolerate the unfavourable business environment, others become frustrated. In February 1997, for example, the US Marathon Oil Co, a unit of the USX-Marathon Group, pulled out of Ukraine where it had been conducting exploratory work in the Poltava natural gas field and invested up to \$200m. The company's spokesman was cited by Reuters as complaining that there were still too many unanswered questions about such issues as licensing, gas marketing, security of investment and tax and legal stability.

Another foreign company that has had painful experiences in Ukraine is the British JKC Oil & Gas plc. But JKC decided to stay in Ukraine and in June 1997 saw a turnaround after a number of setbacks. With the help of a credit from the EBRD, JKC had set up a joint venture with two Ukrainian partners in 1994/95. The joint venture, called Poltava Petroleum Company (PPC), is exploiting the Poltava bloc which has gas reserves of 93bn cu metres. PPC, in which JKC has a 49% stake, got into trouble in 1996 when the buyer of its gas lost the licence as distributor in the domestic gas market. PPC was forced to store its gas and only in spring 1997 did it manage to conclude new delivery contracts. PPC is now delivering gas to state institutions in a number of regions. The contracts became possible because of contacts with Ukrgas which is part of the Ukrainian state gas company Ukrgasprom which also holds a stake in PPC through a subsidiary. In summer 1997 JKC announced plans to expand its offshore licence for oil and gas exploration in the Ukrainian sector of the Black Sea.

The members of a working group of the Crimea-96 conference, which took place in Yalta in October 1996, stated that a lack of bureaucratic transparency, as well as the existence of numerous taxes and other conditions posed serious obstacles to the full development of the oil and gas sector in Ukraine. The delegates from the US offered a long list of complaints:

- uncertainty about which officials are authorised to make decisions on oil and gas projects;
- a heavy tax burden and confusion over the tax regime imposed upon the sector;
- local partners' reluctance to use western technology;
- lack of understanding of international financial procedures;
- problems in the legal system;



- frequent and unwarranted state audits;
- a dearth of impartial regulatory agencies;
- legislative constraints on hiring;
- the involvement of regional organisations;
- constraints on the sale of output.

Nevertheless, participants in the conference agreed that there are good opportunities for investment in the Ukrainian energy sector.

Accordingly, a number of new projects in the Ukrainian oil and gas sector have been planned in 1997. So far foreign investors have concentrated on oil and gas extraction. But modernisation of the gas transport system is about to become the second focus of foreign investment in the Ukrainian energy sector. The sector offers further investment opportunities in oil transport and refining. Ukraine is of vital importance in the Eurasian oil and gas transit system. There are opportunities not only for foreign direct investments but for deliveries of equipment as well. Over 60% of the oil and gas industry demand for process equipment is met through imports (see Chapters 6 and 7 for details on the oil and gas sector).

### **Electricity**

Reforms in Ukraine's electricity market have been slow. That is why the interest of foreign investors arose only in 1996 when leading Ukrainian electricity producers and distributors began to be privatised and when the World Bank started its electricity market development project.

The most promising opportunity for western companies in Ukrainian electricity generation and distribution is the participation in the reconstruction of thermal and hydroelectric power plants and in the closure of the Chernobyl nuclear power plant. These projects are likely to receive enormous funding from the West. Western companies will, therefore, have no problems with the solvency of Ukrainian partners and they will find a relatively favourable business environment. In 1997 Ukraine also started looking for strategic foreign investors in the country's thermoelectric power stations (see Chapter 8 for details of the Ukrainian electricity market). The first generating enterprise to be offered in electricity privatisation was Donbasenergo in November 1997. Although it supplies 13% of Ukrainian electric power, it was the only one of the 11 generating stations surveyed by MC Securities (London) to receive an 'avoid' rating (because of its financial fragility).

### **Portfolio investment**

When the privatisation process gained momentum in 1995 the Ukrainian share market also started to develop. The foundation of the over-the-counter market system, PFTS, in July 1996 created a more favourable environment for the trading of shares. In late 1997 the following companies active in the energy sector were being traded on the Ukrainian share market (see the relevant chapters for company profiles):

- one national oil company;
- one oil transport company;
- five oil refineries;
- four electricity producers;
- a number of regional power distributors ('oblenergos').

**Table 4.4:**  
**Ukrainian energy companies with a market capitalisation of more than \$10m**  
**(as of 30 October 1997)**

Company	Sector	Market capitalisation (\$m)	Rank among energy companies	Rank in overall list of Ukrainian companies
Centroenergo	Electricity production	606.8	1	1
Dneproenergo	Electricity production	567.1	2	2
Donbasenergo	Electricity production	529.7	3	3
Ukrneft	National oil company	398.7	4	4
Zapadenergo	Electricity production	387.5	5	5
Kievoblenergo	Regional power distributor	93.1	6	10
Galichina NPZ	Oil refinery	81.9	7	14
Linos NPZ	Oil refinery	64.3	8	18
Zhitomiroblenergo	Regional power distributor	32.9	9	23
Neftekhimik Prikarpatya	Oil refinery	31.1	10	26
Ternopolenergo	Regional power distributor	26.1	11	29
Lvovgaz	Gas industry	12.4	12	44

Source: *Ekspert*, 45/1997

## CONTACT DETAILS

The telephone country code for Ukraine is + 380 and the city code for Kiev is 44. Since Ukraine's postal service is sometimes not reliable, it may be advisable to use the fax or telephone service instead. Details of relevant Ukrainian state institutions and state companies which are of relevance for the energy sector are given at the end of Chapter 3.

### General information and advice

#### *Chamber of independent ombudsmen for questions concerning foreign investments*

Bogdan Khmelnytsky St. 19A

252030 Kiev

Tel: 224 1933

Fax: 224 5767

The chamber acts as mediator in disputes between foreign investors and government offices.



***Energetika i elektrifikatsiya*** (Energy and electrification)

The journal, which is bimonthly, is published by the Ukrainian energy ministry and specialises in providing information on technical details concerning Ukrainian power stations. Most articles are in Russian.

Editorial office:

Comintern St. 27

252001 Kiev

Tel: 271 1887

***International Centre for Privatisation, Investment and Management***

The centre is active in the investigation of the results of the transition process at the micro level. It also distributes the Russian version of the World Bank journal *Transition*.

Eugene Pottier St. 20

252057 Kiev

Tel: 446 0117

Fax: 446 8277

***Naftova i hazova promislovist*** (Oil and gas industry)

The journal covers all aspects of the Ukrainian oil industry, but concentrates on technical equipment. It is published by the State Committee for Oil, Gas and Oil Refining in co-operation with state companies and the Ukrainian Oil and Gas Academy. As a rule articles are in Ukrainian.

Editorial office:

Bogdan Khmelnytsky St. 6

252001 Kiev

Tel: 221 9290

***Gaz & neft (Haz & nafta)*** (Gas and oil)

*Gaz & neft* (Russian version) and *Haz & nafta* (Ukrainian version) provide comprehensive information on the Ukrainian oil and gas sector. The monthly journal is published by the western Ukrainian information agency:

Infobank

Lviv

Tel: 0322 760 576

Fax: 0322 766 576

***Pipeline news***

*Pipeline News* is a weekly e-mail digest intended to track significant developments in energy policy, pipeline construction and oil- and gas-related investment opportunities in the former Soviet Union. Pipeline News is distributed free of charge to regular subscribers. For subscription information send an e-mail to [jdelay@new-europe.gr](mailto:jdelay@new-europe.gr).

***Posrednik***

*Posrednik* is a leading Ukrainian business journal. Articles are in Russian, Ukrainian legislation is published in the original Ukrainian version.

Editorial office:

Vyborgskaya St. 59/67

252067 Kiev

Tel/fax: 488 5522

### ***RFE/RL newslines***

Radio Free Europe/Radio Liberty (RFE/RL) has a regionwide network of offices and correspondents in eastern Europe and the former Soviet Union. It provides up-to-date information on current events in the region (including Ukraine) through its *RFE/RL newslines*, a daily news service which is distributed free of charge by e-mail. To subscribe to the news service send an e-mail to [listserv@listserv.buffalo.edu](mailto:listserv@listserv.buffalo.edu). In the text of your message type: subscribe RFERL-L YourFirstName YourLastName.

### ***Ugol Ukrainy*** (Coal of Ukraine)

The journal which is published monthly by the Ukrainian coal ministry provides information on all aspects of the coal sector. Most articles are in Russian.

Editorial office:

Krasnoarmeiskaya St. 65/6

252005 Kiev

Tel: 227 3752

### ***Ukrainian Business Communication Centre (Takis programme)***

The centre has been established as a Ukrainian limited liability company. It offers the following services, which are chargeable: analytical reviews, market research, research for business partners in Ukraine, organisation of business meetings, consultation on foreign trade regulations, preparation of agreements, translation, constant follow-up on business proposals, access to database of Ukrainian and foreign businesses.

Velyka Zhitomyrska St. 33

254025 Kiev

Tel: 212 3275

Fax: 228 1443

### ***Ukrainian League of Companies with Foreign Capital***

The league offers advice on financial and legal issues, arranges contacts in Ukraine and provides help for foreign investment projects.

Fanensky St. 2

310166 Kharkiv

Tel: 0572 140109

Fax: 0572 149270

### ***Ukron***

Ukron is an independent company providing consultancy in Ukraine free of charge. It was founded by the Dutch consulting company Euroconsult and the Russian company Rekon.

Serpova St. 3

252115 Kiev

Tel: 444 1014

Fax: 444 3262

### **Embassies, chambers of commerce and national finance and consulting organisations in Ukraine**

It is always advisable to inform one's embassy in Kiev when an investment is made in Ukraine, because the embassy can intervene with local authorities in case of



problems. Moreover, if a country has no chamber of commerce in Ukraine, its Kiev embassy sometimes offers general business advice. Chambers of commerce and commercial embassy departments offer professional advice, normally including basic information on the business environment, legal advice, market research and the arrangement of contacts in Ukraine. Moreover, they are a good source of information on bilateral agreements concerning matters such as taxation.

***Austria***

Embassy:  
Ivan Franko St. 33  
252030 Kiev  
Tel: 220 5759  
Fax: 227 5465

Chamber of commerce:  
Volodymyr St. 48a  
252001 Kiev  
Tel: 225 0318  
Fax: 225 1341

***Belgium***

Embassy:  
Bogdan Khmelnytsky St. 58  
252030 Kiev  
Tel: 219 2910  
Fax: 219 2717

***Canada***

Embassy:  
Yaroslav Wall St. 31  
252034 Kiev  
Tel: 212 0212  
Fax: 225 1305,

Chamber of commerce: at embassy  
Fax: 212 2339

***CESO***

Sophiskaya St. 16/16  
252033 Kiev;  
Tel: 229 0764  
Fax: 229 1737

CESO (Canadian Volunteer Advisers to Business) provides free consultations and other assistance to transfer Canadian expertise to Ukraine.

***Denmark***

Embassy:  
Volodymyr St. 45  
252034 Kiev  
Tel: 229 3340  
Fax: 229 1831

Chamber of commerce: at embassy  
Fax: 229 1831

***Finland***

Embassy:  
Striletska St. 14  
252034 Kiev  
Tel: 228 7047  
Fax: 228 2032

Chamber of commerce: at embassy  
Tel: 228 1220  
Fax: 228 2032

***France***

Embassy:  
Reitarska St. 39  
252034 Kiev  
Tel: 228 8728  
Fax: 229 0870

Chamber of commerce: at embassy  
Tel: 228 7659  
Fax: 229 0870

***Germany***

Embassy:  
Oles Gonchar St. 84  
252054 Kiev  
Tel: 216 6794  
Fax: 216 9233

Chamber of commerce:

Pushkin St. 34

252004 Kiev

Tel: 224 5998

Fax: 225 4234

and

Yermolovoi 35

320122 Dnipropetrovsk

Tel/fax: 0572 960959

**KfW**

Krasnoarmeiskaya St. 9/2

Flat 69

252004 Kiev

Tel: 220 4084

Fax: 220 8167

The KfW (Kreditanstalt für Wiederaufbau) finances projects of German companies in central and eastern Europe. It also offers economic and technical advice.

### **Greece**

Embassy:

National Hotel

Lipska St. 5

252021 Kiev

Tel: 291 8872

Fax: 291 8994

### **Italy**

Embassy:

Street of the January Uprising 25/34

(Cave Monastery),

252010 Kiev

Tel: 294 4242

Fax: 290 5162

Chamber of commerce:

Hospital St. 12

252010 Kiev

Tel: 224 2047

Fax: 224 8113

### **Japan**

Embassy:

Museum St. 4

252029 Kiev

Tel: 462 0019

Chamber of commerce: planned for 1998, ask at embassy.

### **Netherlands**

Embassy:

Turgenyev St. 24

252054 Kiev

Tel: 216 1905

Fax: 216 8105

### **Norway**

Embassy:

Striletska St. 15

252034 Kiev

Tel: 224 0066

Fax: 224 0655

### **Portugal**

Embassy:

Krasnoarmeiskaya St. 9/2

Flat 77

252004 Kiev

Tel: 227 2442

Fax: 227 2066

### **Spain**

Embassy:

Degtyarivska St. 38/44

254119 Kiev

Tel: 213 1858

Fax: 213 0031

### **Sweden**

Embassy:

Ivan Franko St. 34/33

252030 Kiev

Tel: 462 0580

Fax: 462 0581

### **Switzerland**

Embassy:

Ivan Federov St. 12

252030 Kiev

Tel: 220 5473

Fax: 220 8657

### **Turkey**

Embassy:

Arsenal St. 18

252011 Kiev

Tel: 294 3363

Fax: 295 3034



## **UK**

Embassy:  
Desyatynna St. 9  
252025 Kiev  
Tel: 462 0011  
Fax: 462 0013

Chamber of commerce: at embassy

Beso  
PO Box 18  
252001 Kiev  
Tel/fax: 555 4579  
Beso (British Executive Service Overseas) is an independent donor organisation providing consulting services free of charge.

## **US**

Embassy:  
Yury Kotsyubinsky St. 10  
254053 Kiev  
Tel: 244 7354  
Fax: 244 7350  
Chamber of commerce:  
Kudryavsky uzviz 7  
254053 Kiev  
Tel: 417 1413  
Fax: 417 1015

Bisnis, the US Department of Commerce's business information service for the newly independent states, provides a variety of industry and country specific e-mail reports relating to the countries of the former Soviet Union. (e.g. Ukraine – mining, Ukraine – oil/gas or Ukraine – power generation). US companies wishing to receive further information should send an e-mail message to [bisnis@usita.gov](mailto:bisnis@usita.gov).

## **International institutions and organisations**

**EBRD** – European Bank for Reconstruction and Development  
Headquarters:  
82-84 Peckham Rye  
London SE15 4HB  
UK  
Tel: +44 171 338 6096  
Fax: +44 171 338 6690

Kiev office:  
Hotel National  
Lipska St. 5  
Room 407  
252021 Kiev  
Tel: 291 8847

**European Commission** (European Union)  
European Commission headquarters:  
200 rue de la Loi  
1049 Brussels  
Belgium  
Fax: +322 29 66881

Kiev office:  
Kruglouniversitetska St. 10  
252024 Kiev  
Tel: 293 1483  
Fax: 230 2390  
e-mail: [eec@public.ua.net](mailto:eec@public.ua.net)

Tacis information office:  
34 Rue Montoyer  
1000 Brussels  
Belgium  
Tel: +322 29 52585  
Fax: +322 29 68024  
e-mail: [tacis.info@dgla.cec.be](mailto:tacis.info@dgla.cec.be)  
internet: <http://europa.eu.int/comm/dgla/tacis/index.html>

Companies which are interested in tendering for Tacis projects can be added to the central consultancy register. Registration forms can be obtained from: Central Consultancy Register Phare/Tacis.  
c/o Eurocity  
39-41 rue d'Arlon  
1000 Brussels  
Belgium  
Tel: +322 28 54011  
Fax: +322 28 54019

**IFC – International Financial Corporation**

Kiev office:  
Bohomoltsya St. 4  
5th floor  
252024 Kiev  
Tel: 293 0662  
The IFC belongs to the World Bank group. It offers credits to private companies and takes over minority stakes and credit guarantees. Conditions are set according to market criteria.

**IMF – International Monetary Fund**

Kiev office:  
Hrushevsky St. 12/2  
Room 812  
252008 Kiev  
Tel: 293 8926  
Fax: 293 8445

**World Bank**

Kiev office: Pochainynska St. 28-44  
2nd and 3rd floor  
525070 Kiev  
Tel: 293 8926  
Fax: 247 6670

**Banks and investment companies in Ukraine**

The following list gives the addresses of representative offices of western commercial banks in Ukraine, of the five biggest Ukrainian banks (as of 1 January 1997) and of the most active brokerage and investment company in Ukraine (August 1997).

**Alfa Capital Ukraine (Russia)**

15 Bogdan Khmelnitsky Str.  
252001 Kiev  
Tel: 224 1915  
Fax: 246 4480

**Aval Bank (Ukraine)**

Leskova St. 9  
252011 Kiev  
Tel: 294 9691  
Fax: 295 3231

**Banque Nationale de Paris (France)**

Mala Zhitomirska 9b  
254025 Kiev  
Tel: 228 0082  
Fax: 228 8016

**Bank Ukraina (Ukraine)**

Rilsky Pereulok 10  
252025 Kiev  
Tel: 244 1616  
Fax: 229 0239



***Berliner Bank AG*** (Germany)

Krasnoarmeiskaya St. 9/2

flat 51

252004 Kiev

Tel: 224 3576

Fax: 220 8302

***Commerzbank AG*** (Germany)

Pushkin St. 26

252004 Kiev

Tel: 224 2091

Fax: 224 2195

***Crédit Lyonnais Ukraine*** (France)

Khreshchatyk St. 2

252044 Kiev

Tel: 229 5400

Fax: 462 0088

***CS First Boston Ukraine***

(Switzerland/UK)

Krasnoarmeiskaya St. 34

252004 Kiev

Tel: 247 5787

***Deutsche Bank AG*** (Germany)

Shovkovichna St. 26

Flat 7

252024 Kiev

Tel: 293 2123

Fax: 290 6266

***International Dutch Bank***

(Netherlands)

Gogolivska St. 37/2

Kiev

Tel: 219 2281

Fax: 230 2683

***Oshchadny Bank*** (Ukraine)

Prospekt Nauki 7

Kiev

Tel: 265 3140

Fax: 265 6183

***Privatbank*** (Ukraine)

Naberezhnaya Pobedy 32

320094 Dnipropetrovsk

Tel: 0562 790639

Fax: 0562 790629

Kiev office: Gogolivska St. 12

Kiev Tel: 216 8217

Fax: 244 6981

***Raiffeisen Zentralbank Österreich***

(Austria)

Boulevard Lesya Ukrainka 26

Kiev

Tel: 220 5856

Fax: 220 9853

***Société Générale Ukraine*** (France)

Pushkin St. 42/4

252004 Kiev

Tel: 246 5039

Fax: 246 5031

***Ukrsotsbank*** (Ukraine)

Kovpaka St. 29

Kiev

Tel: 269 0836

Fax: 269 1307

***Westdeutsche Landesbank*** (Germany)

Krasnoarmeiskaya St. 9/2

Entrance 7a

252004 Kiev

Tel: 224 3562

Fax: 220 6212

## CHAPTER 5: COAL

### PRODUCTION AND PROFITABILITY

Ukraine's coal industry is centred in the Donbas, the region in eastern Ukraine consisting of the oblasts (administrative units) of Donetsk and Luhansk. Coal was discovered in that region at the beginning of the 18th century. The first primitive coal pits appeared around 1800 and commercial exploitation of the Donbas coal began in the middle of the 19th century. In 1912 Ukraine's share in the coal production of the Russian empire stood at nearly 80%. Nearly half of Ukraine's industrial workers were employed in coal mines at that time. About 70% of production was controlled by foreign investors, mainly from France and Belgium.

In the Soviet Union the soon nationalised coal industry of the Donbas was of great relevance for the rapid industrialisation of the country. Ukraine's coal production rose from 23mt in 1913 to 84mt in 1940. In the mid-1950s the Lviv-Volhynia coal basin and the Dnieper Lignite coal basin began to be developed and produced some 10% of Ukraine's coal. In the late 1960s Ukraine's total coal production already amounted to 200mt. At that time Ukraine accounted for a third of total Soviet coal production. The production level of about 200mt was maintained until the crisis of the Soviet economy in the late 1980s caused a decline.

### Causes of the present crisis

In post-Soviet times the Ukrainian coal industry has become highly unprofitable, reaching a profitability of -20% in 1996 according to official statistics. The World Bank has estimated that the cost recovery ratios are in some cases even below 20%. This is attributable to a number of disadvantages of the Ukrainian coal industry:

- coal extraction has become increasingly expensive, because new seams must be sought at greater depths (see Chapter 1);
- the employment of outdated Soviet technology further increases production costs (the technical equipment of the mines has already been in use for up to 25 years; over 60% of fixed assets are worn out; only 9% of mining plants and equipment meet world standards);
- for social and political reasons, the mines employ considerably more miners than are needed for production; moreover, unskilled labour accounts for at least 45%;
- Ukraine's economic policy aimed at monetary stability has kept the exchange rate of the Ukrainian currency high and has thus made Ukrainian coal more expensive in comparison with imported coal;
- the general economic crisis in the former Soviet Union has considerably reduced demand;



- the mines are still managed by old Soviet-type directors who have proved unable to conduct reforms and have instead spent their time lobbying for subsidies from the government;
- coal enterprises are forced to finance a wide variety of social services from health care for their employees to kindergartens.

### Dimensions of the crisis

As a result of the unfavourable production conditions, a Ukrainian miner produces an average of 112t/yr of coal, compared with 420t/yr in Poland and 2,000t/yr in the UK (World Bank calculation, 1996). Together with the unfavourable macroeconomic conditions, this has led to a situation where Ukrainian coal is completely unable to compete with imported coal. Whereas coal from Poland is sold for about \$40/t in Ukraine, the production costs for the same amount of coal from the Donetsk can in the extreme amount to \$400.

That is why the Ukrainian coal industry is in deep crisis. Output has fallen by over 50% between 1990 and 1996 (see Table 5.1) and 60% of the mines are operating at a loss. Only 18 out of 257 mines did not receive state subsidies in 1996, according to Ukraine's Ministry of Finance. On average the state subsidised every tonne of coal produced in Ukraine to the extent of about \$34.

**Table 5.1: Ukraine's coal production, 1970-1997**

Year	1970	1980	1990	1992	1993	1994	1995	1996	1997 <sup>1</sup>
Production (mt)	207	197	165	128	116	94	84	72	82
1 Estimate									
Source: Ukrainian Ministry of Coal Industry									

### The reasons for state support

Since, for the reasons just stated, Ukrainian coal is unable to compete with foreign coal, its sales depend on support from the state. The state can also protect the domestic market through the introduction of import tariffs and it can guarantee the sale to state enterprises for prices above the market level. As a result of such a policy Ukrainian coal is sold mainly to domestic buyers, primarily power stations and the metallurgical and coke-chemical industry.

The Ukrainian state has three motives for the support of the domestic coal industry. First, a domestic coal industry ensures at least a certain autarky and thus is believed to be an important contribution to Ukraine's national security. In particular, the dependence on Russian energy supplies has demonstrated the country's weakness in the face of economic pressure from abroad. Second, the coal industry is situated in eastern Ukraine and in the first years after independence it was feared that an increasing crisis in the coal industry would promote separatist movements among the

pro-Russian population. Third, the downsizing of the coal industry unavoidably leads to major social problems. The Donbas region is economically dependent on the coal industry which employs 800,000 people and offers social services to the majority of the region's population.

But as a result of the economic and financial crisis the Ukrainian state is unable to subsidise the coal industry to the degree necessary to preserve its present structure. The 1996 budget granted at least \$700m to the coal industry. Later that year an additional \$100m was given to support unprofitable mines. Nevertheless at the end of the year wage arrears in the coal industry amounted to about \$800m and the coal industry was in debt to the sum of \$2.5bn. The government was therefore forced to make an attempt at restructuring the coal industry. The World Bank also took a special interest in the Ukrainian coal industry which it sees as one of the main causes of Ukraine's budget deficit. Even more importantly, restructuring the coal industry is considered to be a major component of structural reforms in the Ukrainian economy. In early 1996 the World Bank sent a mission to Ukraine to examine the situation of the country's coal industry. A proposal for restructuring was worked out and financial support for its realisation was promised.

**Table 5.2: Ukraine's coal mines, 1996**

Coal mine (production association)	Region	Total production in 1996 ( <sup>0</sup> 000 tonnes)	Production of coking coal in 1996, ( <sup>0</sup> 000 tonnes)	Whether profit- able in 1996	Length of new pits constructed in 1996 (km)
Aleksandriyugol	Cherkassy				
	Kirovohrad	1,587	0	No	1
Antratsit	Luhansk	521	0	No	7
Artemugol	Donetsk	1,301	1,168	No	34
Blagodatnaya mine	Kherson		0	No	3
Butovka-Donetskaya mine	Donetsk	234	233	No	1
Dobropoleugol	Donetsk	2,737	2,342	No	39
Donbasantratsit	Luhansk	1,567	0	No	13
Donetskugol	Donetsk	7,369	4,502	No	54
Dzerzhinskugol	Donetsk	712	712	No	20
'Fifty years of Soviet Ukraine' mine	Luhansk	171	0	No	1
Gayevoi mine	Donetsk	339	339	No	9
Industry mine No. 71	Luhansk	736	0	Yes	9
Kirov mine	Luhansk	136	0	No	2
Kirovskaya mine	Donetsk	91	91	No	2
Kommunist mine	Donetsk	143	0	No	2
Komsomolets Donbasa mine	Donetsk	1,380	0	Yes	8

Table 5.2 continues



**Table 5.2: Ukraine's coal mines (cont.)**

Coal mine (production association)	Region	Total production in 1996 ( <sup>0</sup> 000 tonnes)	Production of coking coal in 1996 ( <sup>0</sup> 000 tonnes)	Whether profitable in 1996	Length of new pits constructed in 1996 (km)
Krasnoarmeiskaya-					
Zapadnaya mine	Donetsk	1,636	1,608	Yes	10
Krasnoarmeiskugol	Donetsk	1,084	997	No	9
Krasnodonugol	Luhansk	2,826	2,760	No	26
Krasnolimanskaya					
mine	Donetsk	1,885	1,868	Yes	10
Lisichanskugol	Luhansk	583	0	No	8
Lomovatskaya mine	Luhansk	66	0	No	2
Luganskugol	Luhansk	3,259	161	No	44
Makeyevugol	Donetsk	4,387	3,505	No	83
Matrosskaya mine	Luhansk	91	0	No	1
Menzhinsky mine	Luhansk	237	237	No	2
Miusinskaya mine	Luhansk	188	0	No	5
Novodzerzhinskaya					
mine	Donetsk	107	107	No	3
Novogrodovskaya					
mine	Donetsk	755	0	No	6
Oktyabrugol	Donetsk	1,774	0	No	23
Ordzhonikidzeugol	Donetsk	938	106	No	26
Pavlogradugol	Dnipro-				91
	petrovsk	9,269	2,910	Yes	
Pervomaiskugol	Luhansk	816	0	No	16
Petrovskaya mine	Donetsk	231	231	No	3
Rovenkiantratsit	Luhansk	4,803	0	Yes	53
Schakhterskaya-					
Glubokaya mine	Donetsk	320	0	No	2
Shakhterskugol	Donetsk	1,287	0	No	24
Selidovugol	Donetsk	2,351	0	Yes	18
Stakhanov mine	Donetsk	1,199	1,199	No	5
Stakhanovugol	Luhansk	341	240	No	14
Sverdlovantratsit	Luhansk	1,262	0	No	10
Torezantratsit	Donetsk	3,785	0	No	54
Vergelevskaya mine	Luhansk	214	0	No	4
Ukrzapadugol	Lviv,				
	Volyn	3,841	0	No	30
Zasyadko mine	Donetsk	2,016	2,016	Yes	10
Zhdanovskaya mine	Donetsk	714	0	No	11
<b>Ukraine total</b>		<b>71,665</b>	<b>27,333</b>		<b>807</b>

Note: Details of the biggest coal production associations are given in Chapter 3.

Source: Ukrainian Ministry of Coal Industry

## PLANS FOR RESTRUCTURING

### The World Bank's proposal

According to the World Bank, up to half of Ukraine's mines need to be closed in the next decade to make the industry competitive. Closing uneconomic mines would reduce the state budget by \$200m a year. If the remaining mines were allowed to reinvest profits to increase productivity, the benefits could be even greater. The costs for a four-year programme for restructuring, on the other hand, are estimated by the World Bank to amount to about \$250m to support local governments in the areas affected, \$150m for severance pay, etc. and \$300m for the actual closures and environmental costs.

The World Bank has outlined its proposal as follows:

'Any plan to restructure the coal industry will need to use market incentives, minimise social costs, and have a well-defined role for fiscal support. One approach would involve corporatising existing mines, excluding those identified as uneconomic, into joint stock companies as a first step toward privatisation or liquidation. Profit-orientated managers rather than the government would decide on the reallocation of investments. Resulting mergers would make it easier for managers to transfer workers from unproductive to productive mines rather than having layoffs at one mine and new hires at another, and thus would allow natural attrition to take care of a substantial part of downsizing. Fiscal support would be needed to fund closing costs, but all new investment would be financed from retained earnings and bank loans. A second element of the plan would involve divesting social assets. Some can be privatised, but others would have to be turned over to municipalities, which, to smooth the transition, would need support' (quoted from World Bank 1996, *From plan to market*, Oxford University Press, p.48).

The European Union's Tacis programme also supports the restructuring of the Ukrainian coal industry. The planned programme for 1996-99 agreed on by the European Commission and the Ukrainian government states (paragraph 7b):

'As regards the coal sector, the Ukrainian government has already signed an agreement with the World Bank on the provision of a loan for the rehabilitation of coal mines in the Donbas region. Within this context and given the long-term experience of the EU in restructuring and in social/regional reconversion of the coal sector, the Tacis medium-term objective would be to contribute to the restructuring of the sector, taking into account the social dimensions, in combination with a regional regeneration of the affected areas through the development of new economic activities to create new employment opportunities.'

The main element of the Tacis activities in the coal sector is at present the establishment of an on-site expert group which can provide on demand technical assistance to the profitable and potentially profitable mines particularly in the fields of management, manufacturing, safety and improved environmental performance. Ample consideration will be given to the promotion of dialogue between the coal companies, organisations and regional administration. The Tacis programme is also



supporting the Luhansk and Donetsk regional governments in their efforts to address the social impact of coal restructuring with technical assistance of Ecu5m.

### **The plan of the Ukrainian government**

Guided by the World Bank's proposal, the Ukrainian government has worked out a plan to close the least efficient mines and to modernise the remaining ones. Whereas the World Bank's proposal can be seen as the optimal solution, the government's plan presents a more pragmatic approach, taking into consideration the state's financial crisis and the political resistance a radical restructuring would meet.

According to the government plan the inefficient mines will be transferred to the holding company Ukruglerestrukturizatsiya (Ukrainian coal restructuring), which will manage their closure. The relevant presidential decree ('On structural reform in the coal industry', decree No. 116 of 7 February 1996) provides that a support programme for the miners concerned will be implemented. The miners will receive severance pay and assistance with their search for a new job. A job creation scheme needs to be worked out and the social services provided by the mining companies will in the future be offered by the municipalities.

The plan to increase the productivity of the remaining mines is based on three key elements:

- concentration on the most promising coal seams;
- streamlining of operations by reducing the number of workers and by giving up social assets;
- modernisation of production technology, mainly with the help of imported machinery from the West.

After the restructuring has finished in 2001 Ukraine plans to produce about 100mt of coal a year, with production costs 30% below the present level.

Diversification is seen as a further element of a strategy to increase the profitability of Ukrainian coal mines. The Institute for Geotechnical Mechanics (IGTM) of the Ukrainian Academy of Sciences has developed a proposal which is based on two key ideas. The first is the production of methane by the coal mines. Each year the mines discharge 3.5bn cu metres of methane into the atmosphere. But the methane could be used as a substitute for natural gas in electricity production. This would help to reduce gas imports by about 5-10%, but more importantly it would provide the coal mines with an additional source of income. According to the IGTM, methane reserves in the Donets basin amount to 1.2bn cu metres.

In summer 1997 the American company CBM Energy Ltd agreed on joint action with the two Ukrainian mining companies Donetskugol and Makeyevugol and with the Ukrainian state company Donbassegeologiya to produce methane gas in the Donetsk region. It is expected that about \$115m will be invested in the project.

The second IGTM proposal for diversification of the Ukrainian coal industry is based on the construction (or enlargement) of small thermoelectrical power stations on the

sites of the mines. The stations could provide the mines with cheap electricity since they would be provided with fuel at lower prices and would not have to pay for transmission. Moreover, the stations could be designed especially for the use of the local fuel. As a result they would be four to five times cheaper than bigger stations firing imported gas. The use of western technology especially developed for small power stations would further increase the efficiency of the stations. The first small energy complex based on the IGTM proposal has already been constructed at the Kirovskaya-Zapadnaya mine (Makeyevugol mining company). It has a capacity of 24MW and provides the mine with electricity at prices five times cheaper than the current tariff rates. As a result production costs were reduced by 20%. That means the investment in the energy complex will pay for itself in less than four years.

### **Implementation**

The restructuring of the Ukrainian coal industry began in late 1996 with the reform of the industry's organisational structure. Out of the 257 mines managed by the Ministry of Coal Industry, 46 enterprises with the status of a legal entity were founded, which will manage their production without state interference (see Table 5.2). They belong to 26 state owned and state controlled holding companies. The holding company Ukruglerestrukturizatsiya was created and has the task of managing the closure of inefficient mines. In early 1997 the first 25 mines were transferred to Ukruglerestrukturizatsiya, and another 40-50 loss-making coal mines were chosen to follow in the same year. But the relevant list became the subject of controversy and was changed several times.

The Ukrainian Ministry of Coal Industry demanded – and got – nearly \$900m from the 1997 state budget to guarantee the envisaged production of 82mt of coal in 1997 and to ensure the necessary progress in restructuring. A sum of \$500m was designated for subsidising production, while \$120m was given to Ukruglerestrukturizatsiya for financing the closure of unprofitable mines and a further \$150m was provided for measures to deal with the social consequences of restructuring. Another \$80m was earmarked for modernising the most promising mines. An additional \$300m for the restructuring of the coal industry was expected in the form of a loan by the World Bank. Already in early 1996 the World Bank and the Ukrainian state had agreed on an action plan for economic restructuring of the Ukrainian coal sector and the first half of the World Bank's \$300m coal Sectoral Adjustment Loan (Secal) was released in December 1996, but the remainder was blocked a year later. The tranche of \$150m was not used for the coal industry, but by the finance ministry to pay debts for gas supply, given that the Ministry of Coal could not comply with the World Bank's conditions.

Furthermore, the fact that the state budget was passed by parliament only in June 1997 left the coal industry without the necessary financial means for about six months. Since the IMF, too, delayed the payment of credits built in to the budget and since the income side of the Ukrainian state budget is regularly calculated too optimistically, the coal industry received less in state funds in 1997 than were envisaged by the state budget.

As a result of the financial problems Ukruglerestrukturizatsiya could not afford the envisaged closures. Already the costs of shutting the first 28 pits were estimated at \$500m. According to the holding company, the \$120m due under the state budget



allowed only for the closure of five or six mines. After the World Bank's cancellation of Secal, a small project loan of \$15.8m remains for a pilot closure of three mines in the Donbas.

The lack of funding in combination with Soviet-style management and state regulated markets is responsible for the comparatively slow progress in the modernisation of those mines which will not be closed. According to the World Bank mission, Category 1 mines would be able to finance their modernisation with their own profits, if they were to streamline operations. But they are unwilling to do so because they can survive more easily with the help of state subsidies. Category 4 mines should be closed immediately and Category 2 and 3 mines should be subsidised only for defined periods. But the government could not accept those terms, especially with parliamentary elections due in 1998.

According to the Ministry of Coal Industry the industry needs to invest a total of about \$1.5bn to \$2bn in modern technology to reach the government's targets for production and productivity. By mid-1997 contracts worth about \$500m for the import of modern equipment from the West had already been signed. Since the 1997 budget provides for no more than \$80m for modernising coal mines, other sources of finance are necessary. But only a few mines have proved able and willing to invest retained earnings or to obtain bank credits to modernise production equipment.

## **POLITICAL CONFLICT**

Restructuring the Ukrainian coal industry is further complicated by political conflicts. As Ukraine's main industrial centre, which is responsible for nearly a third of the country's industrial production, the Donbas has gained a special role in politics through its well-organised miners' unions. As early as 1989 miners' strikes in the Donbas were one of the main reasons for the resignation of the communist hardliners in the republican leadership. In independent Ukraine the mainly pro-Russian Donbas saw its interests neglected by President Kravchuk's moderate nationalist stance.

The regional elite of the Donbas co-operated with the miners' unions to pursue its political and economic interests. After extensive strikes in the Donbas, Yuhym Zvyahilsky, at that time mayor of Donetsk and a former director of one of the biggest Donetsk mines, became prime minister in 1993. In the wake of Zvyahilsky's appointment a number of politicians from the Donbas was promoted to influential posts in Kiev.

### **Political lobby of the coal industry loses influence**

When Leonid Kuchma won the presidential elections in July 1994 the so-called Donbas clan was pushed out by the regional elite from Dnipropetrovsk, which is Kuchma's home. Economic reforms which threatened the existence of many mines further alienated Kuchma from the Donbas leadership. Instead of giving in to the region's pressure, the central government used miners' strikes in summer 1996 against the regional leadership, by blaming Donetsk authorities for incompetence and misuse of state funds. Donetsk governor Volodymyr Shcherban was dismissed by President Kuchma.

By stripping the region's political and economic elite of its powers, Kuchma considerably reduced the opposition to the restructuring of the coal industry. But this development is not yet sufficient for the implementation of the government's plan to close inefficient mines.

### **Potential for political protests remains**

The government still faces the resistance of the miners. About 800,000 people were employed by the coal industry in early 1997. Many are afraid of losing their jobs. Moreover, few miners are paid, and even fewer are paid promptly. In mid-1997 the government owed about \$800m in wages to some 600,000 miners.

As a result 1997, like many preceding years, was marked by strikes and demonstrations by Ukraine's coal miners. In February some 2,000 miners from the Donbas picketed the Ukrainian parliament in Kiev, demanding back pay, subsidies for the coal industry and a halt to closures. In the following months a number of mines stood idle as a result of wildcat strikes. In June protests reached a new peak when miners in up to 50 mines were on strike. Some 1,000 coal miners demonstrated in Kiev. A general strike in the coal industry was planned for July. The government reacted by promising to pay out a quarter of all outstanding wages by the end of the year and thus averted the general strike. But in December 1997 some 15,000 miners went on strike again to press for payment of wage arrears.

Since the regional elite of the Donbas has lost its influence the area's miners have been unable to act as a cohesive political force. The miners' actions are often uncoordinated and demonstrations in Kiev have been able to attract no more than 2,000 participants – a small number since there are some 800,000 miners in Ukraine and according to the original plan 34,000 of them will have lost their jobs by 1997. The miners' protests in 1996 and 1997 can, therefore, be seen as the activity of a radicalised minority which can gain wider support among the miners only when demands are limited to claims for the payment of wages and when there are signs of a further deterioration in the miners' social position. The small number of participants in the Kiev demonstrations is also an indicator of the low level of sympathy the miners can arouse in the Ukrainian population outside the Donbas. The pro-Russian stance of the miners has alienated them from the more national-minded Ukrainians in central and especially western Ukraine. Even more importantly, most workers in Ukraine are affected by the same problems as the miners and in their eyes the miners' lobbying and protests gives the coal industry an unfair advantage in the struggle for state support.

To strengthen their political influence in Kiev, the Donetsk Association of managing directors (Doarp) and the regional council of workers' unions agreed in October 1996 to co-operate 'in order to defend the interests of one of the most important regions'. But the most relevant workers' union in the Donbas, the union of the coal industry workers (Prup), has in fact remained loyal to the political centre in Kiev. Although it has demanded more state support for the coal industry, it has been completely unwilling to back up its demands with protest actions until mid-1997. Only when the government seemed to go ahead with its plans for restructuring the coal industry did the Prup join the independent workers' unions and the Donetsk strike committee, which had been organising the earlier protests.



This new development made it possible to threaten the government with the organisation of a general strike. But co-operation between the miners' unions was short lived, since the government's promise to pay some of the outstanding wages was sufficient reason for the Prup to stop protests.

In summary it may be said that four factors considerably limit the political influence of Ukraine's miners:

- the miners lack a political force (i.e. an influential regional elite or a political party) which supports their aims;
- the miners have been unable to find support among the Ukrainian population outside the Donbas;
- the government has singled out the more promising mines for further state support. Workers at these mines are less likely to participate in protests against the government's policy;
- because of financial problems the progress of restructuring has been much slower than planned. With closures being delayed, the call for protests becomes less urgent in the eyes of many miners.

## **FUTURE PROSPECTS**

On the one hand, it is essential for Ukraine to restructure the coal industry. Without reform the industry needs financial support in a dimension which is beyond the scope of the central government. Moreover, restructuring the coal industry is the cornerstone for any structural reform of the Ukrainian economy. A failure with structural reforms will worsen the country's economic crisis and has already put international aid, namely from the IMF and the World Bank, at risk.

On the other hand, restructuring the coal industry has to be financed, too. An uncompromising reform of the industry runs the risk of provoking stronger protests from the miners. With parliamentary elections due in March 1998 and presidential elections scheduled for October 1999, the political leadership in Kiev is highly unlikely to risk mass demonstrations, arising notably from the government's inability to pay outstanding wages.

As a result of this conflict of interests, the progress of restructuring will be slower and less consistent than originally planned. Restructuring the coal industry will remain the long-term goal. The government is likely to stick to its overall plan. The timetable, though, will definitely be changed.

The delay in the closures will weaken the miners' opposition to reforms. In such a situation only rising wage arrears could provoke serious protests. To keep the miners' demands off the political agenda the government will, therefore, be forced to pay at least some of the outstanding wages, as it had already promised in July 1997. Since the coal industry as a whole receives only a given amount from the budget, the need to allocate funds to pay arrears of wages reduces the sum available for other purposes. So far outstanding wages have been paid with the money meant to smooth the

consequences of restructuring. That is why the payment of outstanding wages further reduces the financial means available for the closure of mines and thus delays the progress of restructuring.

Since the miners' opposition will be limited in such a scenario, the most important obstacle to the reform of the coal industry will be the lack of financial means. For years to come the Ukrainian state will be unable to increase subsidies for the coal industry beyond the present level without endangering monetary stability. Money from the state budget will, therefore, first be used to pay wage arrears and to finance the closure of mines. In such a situation the modernisation of the remaining mines will depend on other sources of finance, mainly retained earnings, bank loans and – it is hoped – new credits from the World Bank.

The World Bank seems to accept the fact that the pace of the closure programme will be slowed down, and is likely to continue with financial support, though it might adopt a tougher rhetoric to create a counterweight to the miners' lobby. Even more important than further support from the World Bank is the fact that the organisational restructuring of the coal industry offers promising mines the chance to obtain credits from commercial banks. Already in 1996 the coal industry managed to obtain \$50m in commercial credits for the modernisation of production. With restructuring making progress this sum is likely to rise considerably. A general recovery of the Ukrainian economy, though definitely moderate, would further improve the situation of the coal industry. Demand would rise and customers would be able to pay. As a result some mines would be able to invest retained earnings on a larger scale.

Both the World Bank mission and a team of British specialists paid for by the UK Know-How Fund consider that, at reduced capacities and with working practices adapted to market conditions, the Ukrainian coal industry has a future serving internal demand and some export markets such as Bulgaria and Turkey (where the sole deep-mined coal operation, at Zongalduk, is being closed). The UK team has already identified 69 mines (within nine holding companies) as viable and the World Bank assesses the Russian part of the Donbass (in Rostov-on-Don region) as having long-term prospects under the Russian Secal.



## CHAPTER 6: OIL AND GAS<sup>1</sup>

### HISTORICAL DEVELOPMENT

#### Petroleum industry

In Galicia (western Ukraine) petroleum extraction began as early as 1617, using buckets and hand-pumps to extract from wells up to 40 metres deep. By 1870 annual output had risen to about 20,000 tonnes, but the extracted oil was not refined locally until 1909, when the first significant oil refinery was established in the town of Drohobych. At that time Galicia's petroleum production reached its peak with more than 2mt/yr (5% of world output). British-Austrian interests controlled 78% of Galicia's oil output.

In the interwar period, when Galicia belonged to Poland, the petroleum industry was controlled by large foreign cartels. However, the economic crisis and competition from cheap Middle Eastern oil led to a dramatic decline in oil production. In 1938 output was a mere 0.4mt (0.1% of world output).

In 1950 a number of new oil fields in western Ukraine, which now belonged to the Soviet Union, started production. As a result the output of western Ukraine rose to 1.6mt annually in the following decade. Since 1960, however, production has been in decline because known reserves are largely depleted.

The extraction of oil in central and eastern Ukraine started only in the 1950s. Until then the region had imported up to 2mt of petroleum annually, mainly from the Caucasian region. The imported oil had been refined in Odessa, Kherson and Berdyanske. As early as the 1930s oil exploration was begun in the Dnieper-Donets basin but the second world war interrupted the development of the oil resources. In the decade after the war oil fields in the regions of Poltava, Sumy and Chernihiv were brought into production and by 1965 they accounted for 60% of Ukraine's oil output, replacing the production from western Ukraine.

The first oil deposit in the Ukrainian sector of the Black Sea was discovered in 1959, but exploration remained fragmentary since most of the potential is offshore. Moreover, the Soviet government had concentrated its efforts on the development of Siberian oil. As a result Ukraine's oil industry lacked the necessary capital for the development of new fields. Ukraine's total oil production reached its peak in 1972 with 14.5mt (4% of total Soviet production). Since then output has been declining gradually, to about 5mt by the end of the 1980s, and Ukraine has become increasingly dependent on deliveries from Russia.

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<sup>1</sup> All figures for oil include condensate. Figures in tonnes need to be multiplied by a constant factor of 7.35 to be converted into barrels. All figures for natural gas are for volumes at 20°C. Whereas most countries measure gas volumes at 15°C, Ukrainian statistics give volumes at 20°C. At 20°C, gas volumes are about 7% higher than at 15°C.

**Table 6.1: Ukraine's oil production, 1970-1997**

	1970	1980	1990	1992	1993	1994	1995	1996	1997 <sup>1</sup>
Production (mt)	13.9	7.5	5.3	3.8	3.8	3.8	4.0	4.1	4.2
1 Estimate of the Ukrainian State Committee for Oil, Gas and Oil Refining.									
Source: Ukrainian Ministry of Statistics									

In the early 1990s Ukraine's oil production reached its lowest point with an annual production of 3.8mt. Since independent Ukraine was making every effort to reduce its dependence on Russian oil supplies, the domestic oil industry was subsidised and production did not suffer further during the economic crisis (see Table 2.1). Ukraine hopes that the development of Black Sea oil fields will lead to considerable increases in oil production in the future.

### **Natural gas industry**

Ukrainian gas production started in western Ukraine where the first gas well was drilled in 1910. Commercial extraction started in 1924 in the Lviv region, but the industry remained underdeveloped and was only of local relevance. The rapid expansion of gas production began with the Soviet occupation of western Ukraine in 1939. In 1948 a gas pipeline connecting western Ukrainian producers with Kiev was completed and in 1951 it was extended to Moscow.

But in the 1950s, with the discovery of the Shebelynka gas field in the region of Kharkiv, the centre of Ukraine's gas production shifted to the Dnieper-Donets basin in eastern Ukraine. Already by 1965 the Shebelynka gas field, at that time the largest in Europe, produced more than 65% of Ukraine's total gas output. Gas pipelines connecting the field with main economic centres of Ukraine and Russia were built. As a result Ukraine became one of the Soviet Union's main gas producers contributing about a third of total Soviet output between 1960 and 1975.

With natural gas reserves shrinking and production costs rising, Ukraine's gas production began to decline in the late 1970s. The Soviet government then concentrated on the development of west Siberian resources, and gas production in Ukraine was neglected. Through the already existing pipeline network Ukraine received cheaper gas supplies from Russia.

As a result Ukraine's natural gas output fell from 57bn cu metres in 1980 to only 24bn in 1991. In independent Ukraine the negative trend continued and output reached a record low of 18bn cu metres in 1995 (see Table 6.2). Only success in the development of Black Sea gas fields could reverse that trend. Of Ukraine's present gas production, more than 90% comes from the Dnieper-Donets basin.



**Table 6.2: Ukraine's natural gas production, 1970-1997**

	1970	1980	1990	1992	1993	1994	1995	1996	1997 <sup>1</sup>
Production (bn cu metres)	60.9	56.7	28.1	20.9	19.2	18.2	18.2	18.2	18

1 Estimate by the Ukrainian State Committee for Oil, Gas and Oil Refining.

Source: Ukrainian Ministry of Statistics

## DEPENDENCE ON OIL AND GAS IMPORTS

In the 1980s Ukraine was already dependent on oil and gas supplies from other Soviet republics. In 1990 Ukraine received 90% of its oil and 60% of its gas from Russia. A further 25% of gas consumed in Ukraine was imported from the Soviet republic of Turkmenistan. For the Soviet government it was logical to exploit the more attractive resources in Siberia and central Asia and to deliver the oil and gas to Ukraine at prices which in the extreme were set at less than 6% of the world market price. In 1990 net transfers and subsidies arising from Russian-Ukrainian energy trade amounted to \$3.5bn or 3.6% of Ukrainian GDP.

As a result, after the break-up of the Soviet Union, Ukraine is now heavily dependent on Russian and to a lesser degree Turkmen energy supplies. Since the prices demanded by Russia and Turkmenistan gradually approached world market levels, Ukraine's terms of trade have seriously deteriorated. In addition, Ukraine's export performance has been rather weak. The result is a trade deficit causing considerable financial problems for Ukraine. Even the economic collapse of Ukraine's industry and the resulting decline in energy demand cannot compensate for the immense rise in energy prices. Since the state still subsidises energy supplies for Ukrainian customers, the need to save energy has not yet been felt by many Ukrainian enterprises and households (see Chapter 3).

According to Ukraine's State Committee on Oil, Gas and Oil Refining, in 1998 Ukraine will receive about 70% of its gas imports from Russia. A further 20% will be delivered by Turkmenistan and the remaining 10% by Uzbekistan. Oil will be imported mainly from Russia, with additional supplies coming from Kazakhstan. Ukraine also hopes to receive some oil from Azerbaijan. Thus, all Ukrainian oil and gas imports – apart from possible deliveries from Azerbaijan – will still be supplied through Russian pipelines in 1998 (see Table 6.3).

**Table 6.3: Sources of oil and gas consumed in Ukraine (by country, 1998 plan)**

Source	Gas		Oil	
	bn cu metres	% total consumption	mt	% total consumption
Russia	45	53	10	56
Turkmenistan	15	18	—	—
Kazakhstan	—	—	3	17
Uzbekistan	7	8	—	—
Azerbaijan	—	—	1	5
Domestic production	18	21	4	22
<b>Total consumption</b>	<b>85</b>	<b>100</b>	<b>18</b>	<b>100</b>

Source: Ukrainian State Committee for Oil, Gas and Oil Refining

### Imports from Russia

Ukraine's dependence on CIS energy supplies caused problems after the break-up of the Soviet Union when oil and gas producers began to raise their prices to the world market level. Thus imports of gas from Russia fell from 77.6bn cu metres in 1992 to 55bn cu metres in 1993, but imports from Turkmenistan rose from 1.5bn cu metres to 25.5bn cu metres. Ukraine was unable to pay for the deliveries and soon accumulated considerable debts. Russia's production, too, was affected by the economic crisis and supplies to Ukraine were sometimes erratic. Both Ukraine's delay in making payment and political motives caused Russia to call its energy supplies into question. The Russian leadership hoped that economic pressure would make Ukraine more flexible in negotiations concerning various political and military problems (see Chapter 2).

### *Ukraine under economic and political pressure from Russia*

Russia used energy-related questions to put Ukraine under steady economic and political pressure. In October 1992, as just noted, Russia temporarily decreased the amount of gas supplies. In November 1992 President Yeltsin demanded that Ukraine, like the other former Soviet republics which had withdrawn from the rouble zone, should pay in hard currency for Russian energy supplies. As a result Ukraine was charged considerably more for Russian oil than neighbouring Belarus which avoided any conflicts with Russia. Moreover, Russian promises of supplies were limited to the amount necessary for Ukraine to 'survive the winter'. In January 1993 Ukraine received no oil deliveries at all. In July of that year, Russia again suspended deliveries, this time for about three months. Through the winter of 1993-94 Ukraine experienced a serious energy crisis. Public buildings were not heated, street lights were extinguished and many industries could not work.

In order to ensure Russian deliveries Ukraine promised to pay the world price for Russian energy supplies from 1994 on. On 1 January 1994 Ukraine's fuel debt



amounted to \$533m for gas and the total of Ukrainian debts to Russia had grown to \$2.5bn. Since Ukraine's inability to pay even part of its debt was obvious, Russia now demanded that Russian oil and gas enterprises should receive equity in Ukrainian production capacities as compensation for the debts. Russia especially hoped to take over the Kremenchug refinery and the Khartzyzk pipe-making plant. In further negotiations in March 1994 Russia also demanded a majority stake in Ukraine's gas supply system. But Ukraine refused to hand over any facilities to Russia, judging that this would have increased the dependence of the country's economy on Russia's goodwill.

### *Ukraine strengthens its position*

Although Russia was able to use the Ukrainian dependence on energy supplies to create political pressure, Ukraine was not completely defenceless. Its trump card was the fact that the transit pipeline for Russian oil and gas deliveries to Europe runs through Ukraine. This offered Ukraine the chance to take oil and gas supplies from the transit pipeline at times when Russia stopped deliveries to Ukraine. Without that possibility Ukraine would probably have been unable to resist the political pressure from Russia. When Russia suspended gas supplies in October 1993 and in March 1994, Ukraine reacted by diverting gas from the transit pipeline. A spokesman for the Ukrainian government declared this action to be in line with the bilateral agreement on energy supplies. But this was the only time when Ukraine officially admitted diverting gas from the transit pipeline. Russia, on the other hand, accused Ukraine of stealing up to 30% of the gas deliveries designated for other east European customers.

The transit pipeline also offered Ukraine the chance of charging higher transit tariffs to counter Russian price increases. In 1993 and again in early 1996 Ukraine applied this method, which should also help to repay part of the debts to Russia.

Whereas the Russian-Ukrainian conflict over energy supplies in 1993-94 has already been called an 'energy war', the year 1995 was relatively quiet. Ukraine's new president, Leonid Kuchma, who was elected in summer 1994, saw it as one of his main tasks to agree terms with Russia. His plans for economic reform could only be successful if the lack of energy supplies did not cause a standstill in the country's economy. Kuchma, therefore, tried to smooth relations with Russia, and Ukraine improved the regularity of its payments for Russian energy supplies.

In 1995 the Russian and Ukrainian authorities reached an agreement which meant the complete introduction of world prices into Russian-Ukrainian energy trade. It was also agreed that most of the gas exports to Ukraine made by the Russian gas monopolist Gazprom would be made to private intermediary companies in Ukraine and no longer to the Ukrainian state. For \$2.9bn of the Ukrainian state debt, which was set at \$4.3bn in total, a 12-year schedule of repayment was laid down. The schedule was based on the London Interbank Offer Rate of 1.5%, with a grace period of two years and payments of principal starting on 1 January 1998. The remaining Ukrainian debt of \$1.4bn to Gazprom was restructured into convertible Ukrainian government bonds with a repayment period of 12 years and an annual interest rate of 8.5%. If Ukraine is unable to repay the bonds Gazprom has the right to purchase shares in Ukrainian companies as payment.

In early 1996 Ukraine's decision to increase tariffs for the transit of Russian oil and gas deliveries to European customers led to another escalation of the energy war. Ukraine temporarily cut off Russian oil supplies. Russia reacted by introducing import tariffs for Ukrainian products. When Russia accepted the higher tariffs later that year it became obvious that Ukraine had strengthened its position (see Chapter 7 for details). However, by not renewing payment guarantees, beginning in 1996, the Ukrainian government transferred subsequent responsibilities for payment to specific regional importers.

### *Compromise in 1997*

The fact that the Russian leadership had realised that economic pressure only alienated Ukraine and did not help to promote Russia's interest was confirmed in May 1997 when Russia and Ukraine signed a treaty of friendship and co-operation (see Chapter 2 for details). As part of a general compromise between the two countries the question of Ukraine's debt for Russian energy supplies was largely settled, with the agreement that Russian payments for leasing Crimean port facilities would be used to cancel Ukraine's debt. In addition the two countries agreed to work out a common energy security policy.

The principal remaining problem is the Ukrainian debt for gas deliveries from Russia's Gazprom. It seems likely that Ukraine will be unable to repay the government bonds given to Gazprom under the 1995 agreement and that Gazprom will use this fact to obtain a share in the Ukrainian gas market. As early as mid-1996 Gazprom, the Ukrainian state gas company Ukrghazprom (in Ukrainian: Ukrghazprom) and a consortium of Turkish companies formed the joint venture Gaztransit, which will manage the Ukrainian section of the transit pipeline transporting Russian gas to south-eastern Europe. It is expected that Gazprom will also increase its influence in Ukraine's domestic gas distribution.

On the other hand Gazprom's interest in Ukraine seems to be decreasing for a number of reasons.

- Ukraine's political resistance to Gazprom's attempts is sustained. In particular, the nationalist faction in the Ukrainian parliament is using the threat of a sell-out to Russian interests to campaign against Gazprom's rising influence in the Ukrainian market. Since the legal basis for operations in the Ukrainian gas market is tenuous, Gazprom needs the approval of parliament if it wants to take over the Ukrainian gas sector.
- Ambitious projects, debts of domestic customers in arrears and tax payments have stripped Gazprom of cash. Accordingly Gazprom seems to prefer monetary payments for its gas deliveries to Ukraine. The acquisition of shares in Ukrainian companies is considered to be only the second-best solution.
- Gazprom has ambitious plans for gas exports to western Europe. That is why the company is concentrating all its resources on the construction of the Yamal pipeline, which is to transport Russian gas to the west European market. Since the Yamal pipeline will run through Belarus and not through Ukraine, Gazprom's focus of interest has to some degree shifted away from Ukraine (see Chapter 7).



- In future Gazprom's main interest in Ukraine will be the transit pipeline for gas deliveries to south-eastern Europe and here the company already has a 37% stake in the joint venture, Gaztransit, which will manage the Ukrainian section.
- In late 1996 Gazprom insured itself with Lloyds of London against the risk that Ukraine might divert gas from the transit pipeline for domestic use. Gas meters have been installed at both ends of the Ukrainian section of the transit pipeline to control the amount of gas transported through Ukraine. Thus a further point of conflict between Ukraine and Gazprom has been defused (see Chapter 7).

As a result of these developments in the course of 1997 Ukraine lost its special relationship with Gazprom and became an ordinary customer, though the country is still the biggest consumer of Russian natural gas. With all the conflicts settled and new rules for the relationship firmly set, Gazprom is now mainly interested in the payment practices of its Ukrainian customers. On the one hand, that means that gas deliveries to Ukraine will be removed from the political agenda and will no longer be jeopardised by political conflicts. On the other hand, Ukraine will no longer have a special relationship with Gazprom based on Russia's geopolitical interests and Gazprom's need of Ukrainian transit pipelines. Hence, if Ukraine wants to ensure Russian gas deliveries in the future the country will have to improve its payment practices.

### **Imports from Turkmenistan**

The second important energy supplier for Ukraine is Turkmenistan, which in Soviet times delivered about 25% of natural gas consumed in Ukraine. But whereas Russia is clearly in the stronger position when negotiating with Ukraine, the relationship between Turkmenistan and Ukraine is more finely balanced, because Turkmenistan depends on Ukraine in a number of ways:

- Turkmen gas can be exported to European customers only via Russia and Ukraine. If Ukraine were to close the transit pipeline, Turkmenistan would be left with the former Soviet republics of Georgia and Armenia as the only foreign purchasers of its gas;
- as early as 1992 Turkmenistan had plans to construct an alternative pipeline through Iran, which would bypass all former Soviet republics. But the only cheap producer of the necessary large diameter pipes is Ukraine;
- Turkmenistan is interested in cheap imports of foodstuffs, industrial and consumer goods from Ukraine.

However, Turkmen gas can be exported to Ukraine only through Russia. This increases prices because of Russian charges for transit and, perhaps even more importantly for Ukraine, it means that Russia can stop deliveries from Turkmenistan. As a result energy supplies from Turkmenistan do not really help to lessen Ukraine's dependence on Russia.

### *First conflict in 1992*

In 1992 Ukraine used its more favourable position in the talks with Turkmenistan to demand extremely low prices for gas deliveries. To put pressure on Turkmenistan, Ukraine suspended the delivery of machinery, metals, sugar and other products to Turkmenistan. The central Asian republic responded by stopping gas supplies to Ukraine and by intensifying the search for alternative trade partners. The goods which had been imported from Ukraine were now received from other countries through the Georgian Black Sea ports and efforts to build an alternative transit pipeline to western Europe were intensified.

But in September 1992 Ukraine and Turkmenistan reached a compromise, mainly because both countries had realised that redirecting foreign trade connections would take several years and that it was necessary to find a compromise for the time being. Moreover, both countries were trying to gain more independence from Russia and as a result they found a common interest in their foreign policy.

### *New conflict in 1997*

Since the interests of both Ukraine and Turkmenistan did not alter in the years following the compromise of 1992, their relationship remained largely unchanged. But Ukraine's inability to pay in full for Turkmen gas supplies provided the potential for conflict. When Ukraine started to improve its paying habits for Russian energy supplies and finally reached a compromise with its main energy supplier in May 1997, Turkmenistan felt that its interests were being neglected.

Ukraine's payment obligations for gas supplies from Turkmenistan consisted of 60% in goods and 40% in hard currency. Whereas Ukraine delivered the goods more or less on time, it was unable and unwilling to make the hard currency payments. In 1996 a debt rescheduling agreement was reached, under which Ukraine promised to pay by June 1997 the \$780.5m it owed for gas supplies up to 1995.

When it became obvious that Ukraine was unable to fulfil its promise and, instead, accumulated new debts of about \$200m for gas supplied in 1996, Turkmenistan decided to cut off gas supplies to Ukraine in March 1997. The conflict was further complicated by Turkmen accusations that the cut-off was 'not so much Kiev's fault as that of the Russian intermediary firms that supply gas from Turkmenistan to Ukraine'. Ukraine declared that the payment for gas supplies is the sole responsibility of the commercial companies concerned, and that the Ukrainian government has nothing to do with the debt.

Nevertheless, the conflict led to a considerable deterioration in Ukrainian-Turkmen relations. In early May 1997 Ukrainian President Kuchma was forced to delay an official visit to Turkmenistan, since the Turkmen Ministry of Foreign Affairs had demanded that the problems connected with the gas deliveries, i.e. the questions of payment and transport, should be settled before Kuchma's visit. Kuchma had been expected to sign a number of agreements with Turkmenistan, designed to strengthen bilateral relations. Among these were a long-term gas supply contract and a memorandum on co-operation in the oil and gas sector.



In summer 1997 Turkmenistan initiated a reform of its gas export policy. Plans for the construction of an alternative gas export pipeline were again intensified (see Chapter 7). Responsibility for gas exports was transferred from an international joint venture to Turkmenistan's state oil and gas company Turkmenneftgaz. This move was meant to do away with gas-trading intermediaries, which were seen to be responsible for the bad paying habits of gas importers. Moreover, Turkmenistan declared that gas deliveries to foreign countries, including Ukraine, would only be resumed after gas debts have been paid in full.

Russia's gas monopolist Gazprom reacted by declaring that neither Russia nor Ukraine is any longer in need of Turkmen gas supplies. That means that Turkmenistan's role as gas supplier to Ukraine may be eclipsed in the near future. Nevertheless, in October 1997 Ukraine and Turkmenistan reached an agreement which allowed for the resumption of gas supplies to Ukraine.

### **The search for alternative suppliers**

The problems which Ukraine encountered in relations with Russia and Turkmenistan have caused the country to search for alternative sources of supply. In the beginning Ukraine was looking in all directions. In 1992 it cited Bulgaria, Middle Eastern oil producers, such as Iran, Kuwait and Oman, the central Asian republics of Kazakhstan and Uzbekistan as well as the independent-minded Russian republic of Tartarstan as possible new sources for oil and gas imports.

#### ***Iran***

Serious negotiations were first started with Iran, which was searching for new economic opportunities to recover from the long war with Iraq. Iran was also a traditional buyer of Soviet technology, a fact which offered the chance of barter deals instead of hard currency payments. In addition, Ukraine hoped to become a transit country for Iranian gas deliveries to western Europe.

As early as January 1992 Ukraine and Iran concluded an agreement that provided for annual deliveries of 4mt of oil and 3bn cu metres of natural gas to Ukraine, with payment in industrial goods. In a further agreement in the same year Ukraine, Iran and Azerbaijan decided to start the construction of gas pipelines for the transport of Iranian gas to western Europe. The initial capacity of 25bn cu metres/yr was declared to be available already in 1996. The final capacity was set at 75bn cu metres/yr. There were also plans to build an oil pipeline with a capacity of up to 70mt/yr.

In the following years trade links between the two countries intensified but the plans for Iranian oil and gas supplies to Ukraine did not come to fruition, mainly because Ukraine was unable to pay for its share in the construction costs, which was estimated to amount to \$12bn. Moreover, Iran could not supply more than 15% of the oil Ukraine needed. But a deal with Iran at that time would have increased pressure from Russia, which is much more important as Ukraine's main supplier of energy.

The hope for Iranian oil deliveries to Ukraine rose again in 1996 with plans to construct a pipeline through Turkey from the Mediterranean oil terminal near Ceyhan

to the Black Sea port of Samsun. The pipeline would be a shortcut between the Turkish Mediterranean and Black Sea coasts. For environmental reasons the Turkish government limits the volume of oil shipments through the Bosphorus into the Black Sea (see Chapter 7). Thus, if Ukraine wants to import oil shipped to the Mediterranean from Iran (or any other Middle Eastern country) the crossing of Anatolia with the help of the planned Ceyhan-Samsun pipeline is the main realistic possibility. The pipeline is envisaged to have a capacity of 79mt/yr. From Samsun the oil can be shipped to the Ukrainian port of Odessa and there are plans to transport some of it further to west European markets, once the pipeline connecting Odessa with the Ukrainian transit pipeline has been constructed.

In June 1997 Ukraine and Turkey signed an agreement according to which Ukraine will take part in the construction of the Ceyhan-Samsun oil pipeline. It is planned that the Ukrainian state owned corporation Ukrzarubezhneftegazstroj and the Turkish oil corporation Botas will construct the pipeline. The Ukrainian government has announced that it will attract investment for the construction and place orders with Ukrainian factories for the manufacture of equipment (see Chapter 7).

### *Uzbekistan*

When Ukraine started to experience problems with gas supplies from Turkmenistan in 1996 it began negotiations with Uzbekistan. Gas imports from Uzbekistan could not reduce the dependence on Russia, since Uzbek deliveries, like the Turkmen ones, must be transported through Russian territory, but with Uzbekistan as an alternative supplier Ukraine would be less vulnerable to threats from Turkmenistan. Since relations with Turkmenistan were getting more tense at that time, while a compromise with Russia was being worked out, Ukraine decided in favour of gas imports from Uzbekistan.

In December 1996 the two countries signed an agreement for the delivery of 6bn cu metres of gas from Uzbekistan. Ukraine will conduct geological prospecting, build gas pipelines and drill wells in Uzbekistan as payment for the gas deliveries. Russia has guaranteed the necessary transit capacities.

### *Azerbaijan*

In 1996 Ukraine also started serious negotiations with Azerbaijan and Georgia for the delivery of Azeri oil to Ukraine. In a first agreement Azerbaijan promised in early 1997 to supply 1mt of oil in the same year. The oil was delivered by rail to the Georgian Black Sea port of Poti and from there shipped to Odessa by a newly opened ferry line. Ukraine hopes that further oil from Azerbaijan will be transported to Ukraine in 1998 through a pipeline from Baku (Azerbaijan) to Supsa (the Georgian oil terminal), which will be completed in that year.

In the long run Ukraine hopes to become a major transit country for Caspian oil produced not only in Azerbaijan but in Kazakhstan as well, but these plans can only be realised if Ukraine builds a new oil terminal at the port of Odessa and a pipeline connecting the terminal with the Ukrainian transit pipeline (see Chapter 7).



## **DEVELOPMENT OF DOMESTIC RESOURCES BY FOREIGN INVESTORS**

### **Dependence on foreign investment**

Since Ukraine's production of oil and gas can only satisfy about 20% of domestic demand, the country will depend on imports for the foreseeable future. In order to reduce this dependence in the long run, Ukraine began the development of domestic oil and gas deposits. It is planned to increase annual production of gas from 18bn to 35bn cu metres in the period from 1996 to 2010. In the same period Ukraine's annual oil production is planned to rise from 4mt to 7mt. Domestic consumption, on the other hand, is expected to rise only slightly, because of the introduction of energy saving measures. If the ambitious programme is completed, Ukraine will be able to satisfy about 35% of its oil and gas needs by domestic production.

Although there are three areas with oil and gas resources in Ukraine, the development of new fields is concentrated on the Black Sea shelf, which offers the most promising perspectives (see Chapter 1).

Because of their financial problems neither the Ukrainian state nor Ukraine's private oil and gas companies are able to develop the country's domestic resources in the desired way. First, the government has been unable to provide the funds necessary for geological research. This research is being conducted by the State Geological Committee and by the drilling units of the state oil and gas company Gosneftegasproma. In 1996, for example, they had demanded about \$90m from the state budget as 'absolutely necessary' for the exploration of 21 new deposits and 28 promising areas. But in the end they received a mere 14% of the desired sum and had to give up most of their research projects.

The second important problem for the development of Ukraine's domestic oil and gas resources is the fact that Ukrainian companies lack the necessary equipment for the development of deep-lying deposits. In particular, the remaining deposits in the Dnieper-Donets basin and in the Carpathian region are often found at a depth of more than 6,000 metres. The development of the Black Sea deposits, on the other hand, entails considerable costs for exploration and for building the necessary infrastructure. That is why Ukraine completely depends on foreign investment if it is to reach its production targets for the year 2010.

### **Legislation on oil and gas extraction**

The extraction of mineral resources on Ukrainian territory is regulated by the law 'On nature' (27 July 1994). The subject of the law is that part of the earth's crust which is accessible to geological exploration. This part is 'the exclusive property of the Ukrainian people and can only be offered for exploitation'. The right of exploitation may be granted to Ukrainian and foreign legal entities in the form of a licence. The licence may be issued for a short term (up to five years), a long term (up to 20 years) or an unlimited period. (The unlimited period was restricted to 99 years by the law 'On the regulation of foreign investments', 16 March 1996, with exceptions being possible.) The right to extract mineral resources is given to foreign investors through

tendering and the agreement following on contract. The regulations of this law are also valid for Ukraine's offshore territory according to the law 'On the exclusive economic zone of Ukraine' (16 May 1995).

The tender for extraction rights by foreign investors is regulated by government decrees (No. 709/95 of 31 August 1995, latest change: 15 July 1997; No. 948/95 of 27 November 1995 and No. 742/97 of 15 July 1997). According to the decrees the list of areas offered to foreign investors has to be confirmed by the government. The tender for extraction rights for the agreed areas must be conducted on a competitive basis. To take part in the tender a foreign investor (tenderer) or his official representative in Ukraine has to apply to the State Geological Committee for participation. With the application the following information must be provided:

- name and address of the applying company, including its legal form and details of its bank account;
- a document clarifying the judicial status and the citizenship of the tenderer;
- if a representative of the tenderer is applying, he has to provide a document confirming that he is authorised to apply in the name of the tenderer;
- information on the aim, duration, extent and type of the projected activities of the tenderer concerning the use of the relevant territory, including proposals for a future contract (if the tenderer has already received a licence for the use of another area in Ukraine in the past, he has to add information showing that he is working efficiently in that area);
- suggestions for the concrete realisation of the project, defining the amount of direct foreign investment to be made by the tenderer;
- information on the kind and amount of planned direct foreign investments and guarantees for their realisation;
- a feasibility study of the envisaged use of the separate parts of the territory concerned;
- conditions guaranteeing environmental security;
- a document confirming the available capital and the credit standing of the tenderer. The document has to be certified by an auditor;
- proposals concerning methods of payment.

Whoever secures the tender then has to negotiate a contract. After signature of a proper contract, a licence for the use of the territory concerned can be issued upon approval from the relevant state bodies.

On oil and gas producers, domestic as well as foreign, a surcharge is imposed as on all other producers of mineral resources in Ukraine. The new surcharge, valid from



1 January 1998, will be UAH1.64 per tonne of produced oil and UAH0.67 per thousand cu metres of gas produced.

Since late 1996 the Ukrainian government Agency for Reconstruction and Development has been working on the draft of a production sharing law designed to facilitate foreign investment in oil and gas production. Under a production sharing agreement, a foreign investor would conduct exploration and production work in a specified area at his own risk and with his own funding. The foreign investor would work according to a plan accepted by the Ukrainian state and the production would be apportioned between the investor and the Ukrainian state according to a scheme laid down in the initial agreement. The production sharing law would thus offer an easy alternative to the complicated licensing system. The customs regime and the conditions for pipeline access in Ukraine would also be facilitated under the production sharing law as drafted by the government agency. But it is unlikely that the Ukrainian parliament will accept the draft law without fundamental changes and the discussion of the draft law is likely to last some time.

## **Black Sea shelf**

### ***Licensing***

The major contribution to the increase in Ukraine's oil and gas production is expected to come from the Crimean region and adjacent offshore Black Sea and Azov Sea shelves. The relevant offshore area of nearly 80,000 sq km has been divided into some 160 blocs with an area of about 470 sq km each. The blocs will be offered for tender until the year 2006.

The tender is organised by the Ukrainian State Geological Committee, which announces the number and location of blocs to be auctioned. After consultation with the relevant ministries, the decision to offer the blocs is registered by the Ministry for Foreign Economic Relations and the deposits are then opened up for bidding. In order to participate in the tender a company has to pay a fee of \$25,000 and has to acquire seismogeological information priced at \$2m. The seismogeological study was conducted by Western Geophysical of the US under a contract with the State Geological Committee.

When an offer has been accepted, whoever secures the tender has to negotiate a contract on joint activity with the Ukrainian state company Chernomorneftegaz (see company profile below). It is the task of Chernomorneftegaz to ensure the preferential use of Ukrainian equipment and specialists whenever appropriate.

After signature of a contract with Chernomorneftegaz the State Geological Committee has the right to issue the respective licence with the permission of the State Committee for Oil, Gas and Oil Refining. Issued licences must then be approved by the regional parliament concerned and by the State Committee on Labour Supply. The licences are valid for an exploration period of up to five years and for a further 20-year period of exploitation. One licence grants the right to develop up to four blocs.

## ***Projects***

The first offshore tender was held by the State Geological Committee in late 1996. Shell/Pecten secured the rights to negotiate for four offshore blocs with a total area of 1,600 sq km. The company started negotiations with Chernomorneftegaz on setting up a joint venture to explore and develop the offshore blocs. To confirm its commitment to the Ukrainian oil and gas sector, Shell announced in July 1997 that it intends to invest about \$1.5bn in the sector.

In June 1997 Epic Energy Inc of Canada and Niko Resources Ltd agreed on a joint exploration programme in the Crimea. Epic's subsidiary has a production sharing agreement with Krymgeologia, covering onshore Crimea, an area of 11,000 sq miles (28,500 sq km) with substantial hydrocarbon accumulations. A number of prospects were identified in the area and Niko Resources agreed to fund a drilling programme on two prospects in return for half of Epic's interest in those prospects. The drilling programme started in summer 1997.

Also in June 1997 the British JKK Oil & Gas plc announced that it wanted to expand the offshore licence for its Crimean project from 2,500 to 6,800 sq km. The company holds 45% in a joint venture with the Ukrainian Chernomorneftegas company and is looking for further western partners to share the exploration risks. The joint venture Crimean Petroleum already holds rights to the Delfin bloc with recoverable oil resources estimated at 70mt and with reserves in the deeper water Olimpiskaya and Krayevaya structure amounting to another estimated 100mt.

In 1995 JKK and Chernomorneftegaz started exploitation of the Shtormov wet-gas field. JKK announced a gas-harnessing project. Cooling and separator facilities costing about \$50m will be installed. Chernomorneftegaz has brought two wells on stream. A subsea gas pipeline 4km long was commissioned.

## **Central and eastern Ukraine**

The Poltava bloc (Poltava region) is being exploited by the Poltava Petroleum Company (PPC). The bloc comprises an area of 8,700 sq km with the Novo-Nikolayev and the Rudenkov fields, which have gas reserves of 93bn cu metres. PPC is a joint venture between JKK Oil & Gas plc (49%) and the Ukrainian companies Poltavagazprom, a regional subsidiary of Ukgazprom (26%), and Poltavaneftegazgeologiya (25%). The joint venture sells its gas production to domestic state customers under an agreement reached in June 1997 (see Chapter 4).

Marathon Oil Co of the US, part of the USX-Marathon Group, started exploratory work in the Poltava natural gas field in 1996 and invested up to \$200m in its efforts. But in early 1997 the company decided to pull out of Ukraine, complaining about the unfavourable environment for its activities (see Chapter 4).

The Rudovsko-Krasnosavod field (Poltava region), with estimated gas reserves of about 120bn cu metres, is being developed by a joint venture between United Kiev Resources of Canada and Poltavaneftegaz, a subsidiary of the Ukrainian national oil company Ukrneft.



The Lelyaki oil field near Priluki (Chernihiv region) is being redeveloped by Kashtan Petroleum Ltd, owned by Chernigivneftegaz, a subsidiary of Ukrneft, and Fountain Oil Inc of the US, which has a 40.5% share. The field, with an area of 55,000 sq km, was developed for the first time in the 1960s. The planned workover programme for 1997 includes 12 wells. According to Fountain Oil Inc, results from the logging of the first workover well were better than anticipated and the company has stated that it looks very favourably on the further development of the field.

The Chervonozavodsky oil field (Poltava region) will be developed by Carpathy Petroleum Co of Canada and Poltavaneftgaz. According to an announcement made in early 1997 the value of the joint project amounts to \$81m.

In early 1997 British Petroleum signed an agreement to exploit the old gas fields in the Dnieper-Donets basin. In June 1997 the company began to discuss the possibility of its participation in the extraction of deep-lying gas from Shebelynka (Kharkiv region). Since Ukrainian companies do not have the equipment to extract gas from depths of more than 6,000 metres, the extraction of the substantial new gas deposits found at a depth of 8,000 metres at Shebelynka depends on the use of western equipment, which could be supplied by BP. In October 1997 BP announced that it will be possible to produce up to 50bn cu metres of gas annually in the area.

In August 1997 Lateral Vector Resources of Canada completed a feasibility study of the Bugruvativske oil field (Sumy region). The company plans to form a joint venture with Ukrneft for the rehabilitation of the oil field with western technology. The project, worth up to \$110m, could produce a total of about 13mt of oil.

Also in summer 1997 the Ukrainian State Anti-Monopoly Committee agreed to the foundation of the closed joint stock company Ukrneftegaztekhlogiya, which will rehabilitate old oil wells and thus increase gas and oil production in the Donetsk-Pridneprovsk region. The biggest stakeholder is Amenda Enterprises Ltd of the US with 22%. The Ukrainian state controls 15% and the state company Ukrgazprom holds another 15% together with its subsidiary Poltavagazprom. The remaining shares are held by three Ukrainian companies and a charitable fund.

### **Carpathian region**

The known oil and gas reserves of the Carpathian region amount to 1,371mt and the estimated reserves are set at 1,756mt but with its present technology Ukraine is able to extract only 6mt. That is the result of the complicated geological composition of the region and the fact that Ukraine does not have the modern equipment necessary for drilling beyond a depth of 6,000 metres. Accordingly, the development of oil and gas fields in the Carpathian region depends on foreign investment. In 1997 Ukraine offered five areas in the region for oil and gas extraction.

In November 1996 a one-year programme called 'Prospecting and extraction of oil and gas in the Carpathian region' and financed by the European Union's Tacis programme was started. The programme offered Ecu1.8m for measures to attract foreign investors. As a result several companies are negotiating oil-related projects in the Carpathian region.

The results of geological research in an area of 3,000 sq km in the Carpathian region are offered to interested companies. An international consortium, consisting among others of Beicip-Franlab (France), DLD International (France) and Joel Follet Resources (Belgium), was commissioned to conduct further geological research in the Lopushnyanskaya zone (Ternopil region), which seems to be the most promising area.

Two foreign companies are currently developing oil fields in the Carpathian region. The Canadian Carpatsky Petroleum Co formed the joint venture Ukrkarpatoil with Ukrneft in 1993. Ukrkarpatoil is developing the Bitkiv-Babichensky deposit (Ivano-Frankivsk region). Fountain Oil Inc of the US is Ukrneft's partner in the Borislavskaya Oil Company which develops the Stynavsky deposit (Lviv region).

## COMPANY PROFILES

### Ukrneft

Ukrneft (in Ukrainian: Ukrnafta) is the national oil company of Ukraine. It is the largest and the only privatised oil producing company in Ukraine, extracting oil and gas from the continental part of the country. In 1996 the company extracted 3.2mt of oil (i.e. 78% of Ukraine's total production) and over 3bn cu metres of natural gas (i.e. 17% of Ukraine's total production). Ukrneft is extracting oil and gas from 108 out of Ukraine's 208 currently exploited oil and gas deposits. The company develops small deposits with deep lying but high quality oil. According to experts' estimates Ukrneft's oil reserves will last for another 40 years at current levels of crude oil production.

**Table 6.4: Ukrneft – key indicators, 1995-98**

Indicator	1995	1996	1997 <sup>1</sup>	1998 <sup>2</sup>
Oil production (mt)	3.33	3.19	3.12	3.05
Natural gas production (bn cu metres)	2.80	3.01	3.15	3.27
Net sales (\$m)	357.16	472.53	473.62	478.04
Profit (\$m)	202.60	225.89	255.61	289.34
Net profit (\$m)	141.82	158.12	164.98	164.54
EPS (\$)	2.61	2.92	3.01	3.10
P/E	n/a	1.47	3.26	3.23
P/S	n/a	0.49	1.24	1.13

1 Estimate (October 1997).

2 Forecast.

Source: Alfa Capital Ukraine

However, Ukrneft's reserves consist largely of oil which is deposited at a depth of more than 4,000 metres and needs modern technologies for extraction. Active



reserves amount to 36% of total reserves and are currently the basic ones used for oil production. Because of a lack of financing and insufficient material and technical provisions, exploratory drilling fell steadily from 114km in 1987 to a mere 23km in 1995.

In order to get the necessary financial and technical support for exploration and production Ukrneft has formed a number of joint ventures with western partners. In 1997 Ukrneft worked in joint ventures with the Canadian Carpatsky Petroleum Co (Ivano-Frankivsk region and Poltava region), with the US company Fountain Oil Inc (Chernihiv region and Lviv region), with the Canadian United Kiev resources (Poltava region) and with the Canadian Lateral Vector Resources (Sumy region). Further joint ventures were considered with Pecten (US), CCI Holding (Austria) and Trident Exploration (Canada).

### *Privatisation*

As early as 1992 the Ukrainian State Property Fund initiated the reorganisation of the oil and gas sector. After more than a year of administrative proceedings Ukrneft became a separate company in August 1993. In early 1994 the company was transformed into a limited company (OAO – Otkrytoye Aktsionernoye Obshchestvo or open stock corporation) with headquarters registered in Kiev. The sole founder was the State Committee for Oil, Gas and Oil Refining.

After another year of administrative proceedings a plan for the privatisation of Ukrneft was finally agreed in January 1995. Of the shares, 30.5% were to be auctioned to Ukrainian citizens in exchange for privatisation vouchers while 15% were to be tendered to foreign investors. A further 15% were to be offered to domestic investors, 9.5% were reserved for the employees of Ukrneft and the remaining 30% were to remain state property managed by the State Property Fund.

By summer 1995 8.6% of Ukrneft shares had been sold to its staff. The further progress of the company's privatisation was hampered by parliament when it decided, in disregard of the existing law on privatisation, that some of Ukrneft's subsidiaries could not be privatised because of their 'national importance'. Citing the superiority of the law on privatisation, the State Property Fund nevertheless organised an auction of Ukrneft shares in September 1995. As envisaged in the privatisation programme, 30.5% of Ukrneft shares were sold to Ukrainian citizens. As a result about 1% of the Ukrainian population became shareholders in Ukrneft.

But the Ukrainian parliament remained unwilling to accept the privatisation of Ukrneft. The State Property Fund and the Prosecutor General were forced to investigate the legality of the auction. In the end the State Property Fund stopped the issue of shares to the successful bidders after only 3.4% of Ukrneft shares had been allocated. Although the legality of the privatisation of Ukrneft was confirmed by an independent commission and by a court in 1996, the remaining 26.1% of Ukrneft shares auctioned in 1995 were not issued because of the political stalemate between government, parliament and State Property Fund.

### *Share market*

Shares in Ukrneft appeared on the market at the beginning of 1996, with regular quotations on the OTS Stock Trading System since November 1996. Trading remained static until April 1997 because of the uncertainty surrounding the company's privatisation. Share prices rose by 130% in April-May 1997, however, as a result of the registration of shares by the State Securities and Stock Market Committee.

The small free float (2-3% of the shareholders' equity) and the impossibility of share reregistration (the company's register was opened only in the second half of June) have depressed share prices. For these reasons, shares in Ukrneft are trading at a discount compared with shares of similar oil producing companies in Russia. (Report provided by Alfa Capital Ukraine.)

### *Future prospects*

There are several proposals for the restructuring of the Ukrainian oil and gas sector. Nearly all of them name Ukrneft as the core of a vertically integrated national oil company. An alternative proposition has been made by the State Committee for Oil, Gas and Oil Refining. The committee favours the creation of a number of regionally-based oil and gas producing companies from the existing regional subsidiaries of Ukrneft and Ukgasprom. But as a result of the political struggle over the future of Ukrneft any proposal for the restructuring of the company is unlikely to find the necessary support in the near future. The decision to create a vertically integrated company was not adopted at the shareholders' meeting in October 1997. A decision may be reached at the next meeting, in March 1998.

According to the investment and brokerage company Alfa Capital Ukraine, vertical integration has three main advantages:

- the establishment of regular communications between the enterprises which engage in the successive stages of the interrelated technological process;
- an improvement in the financial stability of the company because of a reduction (by 10-15%) in the need to use promissory notes;
- the growth in aggregate business solvency as a result of the growth of aggregate capital by 25-30%.

According to Alfa Capital the creation of Ukrneftegaz by presidential decree would yield an additional \$6.5m in annual profit. In this case the mechanism of share conversion would be the main risk for investors.

### **Ukgazprom**

Ukgazprom (in Ukrainian: Ukrhazprom) is the national gas company of Ukraine. It is the largest gas producing company in Ukraine, extracting gas and oil condensate from the continental part of the country. The company is organised in the form of an



open joint stock corporation, but all shares are held by the Ukrainian state and there are no plans to sell shares in Ukrgazprom to private investors. In 1996 Ukrgazprom produced 14.5bn cu metres of gas (i.e. 79% of Ukraine's total production) and 0.7mt of oil (i.e. 17% of Ukraine's total production) mainly in the form of condensate. The production unit of Ukrgazprom extracts natural gas from 87 deposits. Production is managed by subsidiaries, each responsible for one region.

Ukrgazprom is experiencing a financial crisis because many customers are unable to pay for gas deliveries. In July 1997 the company had received payments for 83% of the gas delivered in 1995, for 64% of the gas delivered in 1996 and for only 16% of the gas delivered in the first half of 1997. As a result Ukrgazprom has debts of about \$300m to the state budget and, furthermore, is unable to explore new fields or to modernise production technology.

The outdated production technology employed is the main problem for Ukrgazprom's production unit. A total of 376 out of 2,007 wells stood idle in early 1997 as a result of technical problems. Worst hit by these problems is the subsidiary Poltavagazprom. Of its 405 wells, 130 were not working at that time. The subsidiary is responsible for gas production in the Poltava region and has formed the joint venture Poltava Petroleum Company (PPC) together with JKC Oil & Gas and Poltavaneftegazgeologiya. The support from the two partners ensures that the level of production can be maintained. To intensify its co-operation with JKC, Ukrgazprom in late 1997 bought 22% of the British company. The strategic alliance is meant to help PPC obtain better access to the Ukrainian market.

A further consequence of the lack of modern production technology is Ukrgazprom's inability to extract gas from depths of more than 6,000 metres. The extraction of substantial but deep-lying gas deposits found at the Shebelynka gas field (Kharkiv region), therefore, depends on the help of a western partner. In order to secure that help Ukrgazprom signed an agreement with British Petroleum in early 1997.

Ukrgazprom also operates as a gas wholesaler in the domestic market (see below) and it is responsible for the transit of Russian gas to European customers (see company profile in Chapter 7).

### **Chernomorneftegaz**

Chernomorneftegaz (in Ukrainian: Chornomornaftohaz) is the Simferopol-based state company, responsible for oil and gas exploration and exploitation in the Black Sea and onshore Crimea. In 1997 the company extracted oil and gas from nine deposits, producing 0.08mt of oil (2% of Ukraine's total production) and 0.7bn cu metres of gas (4% of Ukraine's total production). Chernomorneftegaz runs the gas pipeline network in the Crimea and accounts for 40% of the peninsula's gas consumption.

The company concentrates on the development of offshore production in co-operation with foreign investors. It has formed the joint venture Crimean Petroleum with JKC Oil & Gas for the development of the Delfin bloc. In late 1996 Chernomorneftegaz also started negotiations with Shell/Pecten on the formation of a joint venture for the development of four offshore blocs.

There are plans to create a new company, called Ukrshelfneftegaz, which would be responsible for all aspects of the programme to increase offshore production. The new company would take over the production unit of Chernomorneftegaz as well as some assets from refining, petrochemicals and distribution enterprises. Like Chernomorneftegaz, the new company would remain state property and no change is envisaged in co-operation with foreign investors.

### Oil refineries

Historically the oil refining industry has lagged behind oil extraction in Ukraine. In the 1950s and 1960s new refineries were built and existing facilities were expanded. As a result Soviet Ukraine had eight large refinery complexes. In post-Soviet Ukraine six of them are still working. They have a total capacity of about 60mt/yr and they can produce about 50 byproducts. But the average depth of refining lies at only 54%.

**Table 6.5: Ukraine's output of oil products, 1990-97**

Oil product	mt							
	1990	1991	1992	1993	1994	1995	1996	1997 <sup>1</sup>
Petrol	8,111	8,072	5,236	3,249	3,952	2,757	2,546	2,200
Kerosene	—	1,834	833	305	186	4	—	0.5
Diesel fuel	12,541	11,025	7,973	5,930	4,950	4,020	3,626	3,500
Fuel oil	25,570	24,196	16,971	10,297	8,081	6,588	5,082	4,200
Liquid gas	373	366	253	149	135	104	92	110
Bitumen	942	886	677	446	422	339	207	200
Oils	416	409	309	258	203	181	147	61

<sup>1</sup> Estimate

Source: *Gaz & nefit* (Infobank), 7/1997

Demand for refined products since 1990 and forecast to 2010 is shown in Table 6.6.

**Table 6.6:  
Ukraine's past and forecasted demand for refined products, 1990-2010**

	mt			
	1990	1995	2000	2010
Fuel oil	22.7	6.1	5.5	5.4
Diesel fuel	12.1	5.3	6.2	8.7
Gasoline	7.9	2.0	1.5	2.0
Other products	14.0	2.9	2.5	3.7

Source: IEA 1996, p. 126



In 1996 Ukraine's refineries worked at only 20% of capacity and refined only 13mt of crude oil, down from 17mt in 1995. This crisis has a number of causes. First, many Ukrainian customers are unable to pay for deliveries because of the general economic crisis. Second, Ukrainian refineries employ old technology. Ukrainian refineries have to pay higher prices for oil deliveries from Russia, the main supplier, since a customs fee was introduced by Russia. As a result production of oil products is often unprofitable and Ukrainian refineries often work on the basis of processing deals. They will be able to increase their capacity utilisation rates considerably only if deliveries from Russia are obtained at lower prices or if an oil terminal at Odessa port comes into operation, enabling Ukraine to import oil from the Caspian Sea or the Middle East.

**Table 6.7: Ukraine's refineries – production, 1996**

Refinery	Region	Capacity (mt)	1996 output (mt)	Pipeline for oil deliveries
Galichina (Drahobych)	Lviv	4	1.0	'Druzhba' (western Siberia –eastern Europe)
Kherson	Kherson	6	1.5	Kuibishev–Kherson
Kremenchug	Poltava	19	5.8	Kuibishev–Odessa
Linos (Lisichanske)	Luhansk	23	2.2	Kuibishev–Odessa
Odessa	Odessa	4	1.5	Kuibishev–Odessa or Odessa oil terminal
Prikarpatya (Nadvirna)	Ivano- Frankivsk	4	0.9	From local oil fields or by train

Source: Ukrainian Ministry of Statistics

### **Privatisation**

The privatisation of Ukraine's refineries is being conducted in three stages. The first step was the organisational restructuring of the country's oil and gas industry which took place in 1992-93. Out of the Ukrainian oil and gas complex, which in Soviet times was run by the state administration, a number of separate companies were created. In opposition to Russia, where vertically integrated oil companies were set up, Ukraine decided to organise the different steps of the production process into different enterprises. Thus the six refineries of the country became six separate companies which were soon transformed into joint stock corporations.

In a second step of reorganisation, the oil and gas sector stakes in the companies were auctioned to the population in exchange for privatisation vouchers. As a result of these auctions, being conducted since 1995, between 5.18% (envisaged for Kherson refinery) and 30% (in the case of Prikarpatya) of the refineries are being offered to the Ukrainian population. A further part of the refineries' shares is reserved for the workers and managers of these refineries. Their stake is between 5.6% (in the case of Linos) and 23.82% (envisaged for Kherson). The refineries of Galichina, Linos, Odessa and Prikarpatya are listed on the over-the-counter market system.

Offering the population and the workforce a stake in the companies was meant to compensate them for financial losses caused by hyperinflation and unpaid wages. At the same time privatisation was expected to create a market environment, which would result in competition and to increasing efficiency in the companies, thus leading the oil industry out of its economic crisis.

In the third and final step of the restructuring process the companies were then to be provided with the financial means necessary for their modernisation. The Linos and Kremenchug refineries managed to obtain loans from foreign banks for their modernisation, but because of their bad economic situation they have considerable problems in repaying the debts, and further loans for other refineries are unlikely. In April 1997 the government announced a different solution. Foreign or domestic strategic investors should take over the state's stake in the refineries and provide the necessary capital for modernisations. Shares totalling 75% in Linos, 61% in the Kherson refinery and 51% in the Odessa refinery were to be offered in a first round.

**Table 6.8: Ukraine's refineries – finance, 1996**

Refinery	Sales (\$m)	Sales/ production (\$/t)	Net income (\$m)	Market capitalisation <sup>1</sup> (\$m)	P/E	P/S
Galichina	93	95	10	38.7	3.87	0.41
Kherson	19	13	2	7.9	4.05	0.41
Kremenchug	216	15	25	Closed joint stock company		
Linos	58	27	Loss	23.1	—	—
Odessa	23	15	6	14.7	2.45	0.63
Prikarpatya	89	100	6	16.8	2.80	0.18

1 As of June 1997.

Source: Alfa Capital Ukraine

### ***Russian interest***

Most of the Russian refineries are in bad shape. Nevertheless all main oil companies in Russia are interested in boosting their product output. As a result Ukrainian refineries, which have an unused capacity of up to 45mt annually, have become attractive to Russian oil producers. Their interest is promoted by the fact that Ukraine is connected by pipeline to Russia's main oil producing areas. In 1997 four Russian oil companies had already started to refine some oil in Ukraine.

Russia's biggest oil company, Lukoil, is interested in buying shares in the Ukrainian oil refineries in Drahobych, Kherson and Odessa, according to an announcement made by the company's president, Vagit Alekperov. Lukoil already refines some of its oil at Kremenchug. Moreover, Lukoil's gasoline stations in Moldova will be supplied in part by Ukrainian refineries.

The Russian oil companies Yukos, Rosneft and Tyumen Oil are refining some oil at the Linos refinery and they are expected to bid for a 45% stake in the refinery. The



Russian oil company Tatneft plans to refine oil at the Kremenchug refinery. Tatneft has no refineries of its own but is linked directly by pipeline to the Ukrainian refinery.

### *Galichina refinery*

The Galichina oil refinery, situated in the town of Drahobych in western Ukraine, is one of the smallest refineries in Ukraine, with a capacity of about 4mt. With 25%, Galichina refinery has the third highest capacity utilisation rate. However, the company's net income of \$10m was exceeded only by the Kremenchug refinery which is in a special position among Ukraine's refineries as a result of its close co-operation with Russian oil producers.

Because of its relatively favourable financial position and because strategic investors preferred other refineries, Galichina refinery was the first to sell its shares in the Ukrainian share market. In 1997 nearly 75% of the company's shares were traded on the over-the-counter market. Galichina refinery thus reached a market capitalisation of about \$46m in July 1997.

For portfolio investors the Galichina refinery has three main advantages:

- even without a general improvement in the situation of Ukraine's refineries, it will be able to operate with considerable profits;
- since 75% of the company's shares are traded on the share market, there is no risk that political quarrels over privatisation and ownership questions will endanger private investments in it;
- it pursues a constructive policy in relations with its shareholders. Registration of ownership rights, for example, is made within three days, which is reasonably fast under Ukrainian conditions.

On the other hand, the share price has already risen considerably since Galichina refinery issued its first shares in 1995 and the price/earnings ratio of 4.8 (July 1997) is the highest among Ukraine's refineries.

### *Kherson refinery*

Kherson oil refinery (in Ukrainian: Khersonnaftopererobka, in Russian: Khersonneftepererabotka) is Ukraine's third largest refinery, with a capacity of 6.5mt. However, in 1996 it worked at only 25% of capacity, refining 1.47mt, down from 2.29mt in 1995. The refinery underwent modernisation in 1992-94 when a catalytic reformer was installed. There are also plans to install a hydrotreater for diesel fuel and to increase capacity to 8.5mt. The cost of refining 1t of crude oil is \$10.6, which is a relatively low rate in comparison with the other Ukrainian refineries.

The Kherson oil refinery is in the process of creating a joint venture for the production of light refined products with the Production & Trading Group (Cayman Islands). The joint venture, called Cracking, will take the form of a closed joint stock

company with both partners holding a 50% stake. It is estimated that profits of the Kherson refinery might increase by about \$3m annually after the successful creation of the joint venture.

To finance its plans for further modernisation the refinery hopes to attract strategic investors, who will take part in the privatisation of the refinery. It is planned that a 45% stake in the Kherson oil refinery will be sold to foreign or domestic strategic investors by tender. A further 5.18% stake will be sold to the Ukrainian population in exchange for privatisation vouchers. A share of 23.82% is reserved for the workers and managers of the refinery. The remaining 26% will continue to be state property.

### *Kremenchug refinery*

The Kremenchug refinery (in Ukrainian: Khremenchugnaftoorgsintez, in Russian: Khremenchugnefteorgsintez) is the only refinery in the former Soviet Union which is able to process large amounts of high sulphur oil. For that reason, Russia is anxious to sell all of its high sulphur oil to the Kremenchug refinery. Otherwise it would be necessary to mix the high sulphur oil with high quality oil, which would reduce quality. Even when the 'energy war' between Russia and Ukraine escalated in 1993-94 the Kremenchug refinery was still receiving supplies from Russia and, because of the low quality of deliveries, at a low price. With Russian supplies guaranteed, the refinery was responsible for nearly half of the crude oil refined in Ukraine in 1996.

In May 1997 Mitsui Corp (Japan) decided to invest in modernising the Kremenchug refinery. The refinery will receive a \$200m loan for the modernisation of a catalytic cracking facility which will allow more thorough oil processing and for the construction of a cracking plant for high grade diesel fuel production. Completion of the project is envisaged for 2001.

The Russian oil company Tatneft is interested in getting a share in the Kremenchug refinery, which has an annual capacity of 19mt. Tatneft produces about 25mt of oil annually but has no refining capacity of its own. In 1995 Tatneft and the Kremenchug refinery, which is connected by pipeline to Tatneft's oil fields in Tartarstan, formed the closed joint stock company Ukrtatneft, which comprises 17 oil fields in Tartarstan and the Kremenchug refinery with its complete infrastructure. But because of a number of still open questions – initially concerning problems with finance, taxes and customs duties – the start of operations was continually delayed.

Tatneft's access to the Ukrainian refinery is facilitated by the fact that the company is the official co-ordinator for Russian oil exports to Ukrainian refineries. Hence, Tatneft controls the export price and assists the state administration in deciding who will export which amounts of oil to which destination. Tatneft, therefore, has the means to disadvantage competitors in the bid for Ukrainian refineries.

### *Linos refinery*

The Linos refinery, the official name of which is now Lisichansknefteorgsintez (in Ukrainian: Lisichansknaftoorgsintez), was the last refinery to be constructed in Ukraine. It is the country's biggest refinery with a capacity of about 23mt/yr. Moreover, Linos is equipped with some modern technology, especially a



polypropylene plant completed in 1993. Linos now has fixed assets estimated to be worth more than \$1bn.

But the Linos refinery has been too big and too expensive for post-Soviet Ukraine and has been working far below capacity since the break-up of the Soviet Union. In 1996 it refined a mere 2mt, 14% of its capacity. This situation has caused considerable financial problems. In mid-1997 Linos owed \$160m to Westdeutsche Landesbank (Germany), which financed the construction of the polypropylene plant in the early 1990s. The debt must be fully repaid by April 1999, but so far the debt is still mounting since Linos has continually defaulted on repayment. The refinery's financial situation is complicated by the fact that the Ukrainian government has not yet paid \$55m for the confiscation of oil products made by the refinery in 1993. On the other hand Linos owed a further \$76m to Ukrainian firms. The refinery filed for bankruptcy in early 1996.

Like other refineries, Linos was privatised to solve its financial problems. In 1996, 19.4% of the company was auctioned to the Ukrainian population in exchange for privatisation vouchers and 5.6% was given to Linos workers, leaving 75% as state property. In April 1997 the Ukrainian government announced its intention to tender in trust the state holding in the refinery.

When Ukraine reached a general agreement with Russia in May 1997 the Ukrainian government declared that 45% of Linos would be offered in a non-commercial tender, in which those Russian oil suppliers could take part who were able to get a Russian government guarantee for oil deliveries of at least 6mt/yr for refining at Linos. The Russian oil companies Yukos, Rosneft and Tyumen Oil, which are the largest suppliers of oil to Linos, are expected to bid for the stake in the refinery. The news agency Reuters quoted Vagit Alekperov, president of Russia's biggest oil company Lukoil, as saying: 'We are not looking at Lisichansk, there are good Russian commercial structures in place there and they are able to realise their plans without our participation.'

However, the Ukrainian parliament adopted a bill in July 1997 which restricted participation in the tendering to Ukrainian companies with no more than 25% of their registered capital held by foreign investors. The bill favoured the Ukrainian oil trader Ukreximnefteprodukt, which would most likely have won the tender under that bill. But the bill was vetoed by President Kuchma on the grounds that it did not conform with the constitution, which grants the government and not the parliament the right to deal with state property.

The management of Linos welcomed the president's decision. The director of the refinery was cited by Reuters as saying: 'Why should deputies run the plant? By the time Ukraine finds non-Russian oil sources, the plant will be scrap metal. We are inextricably tied to Russia.'

Westdeutsche Landesbank, the refinery's creditor, informed the Ukrainian government as early as December 1996 that it opposes any privatisation of Linos as long as the government does not confirm its guarantee for the return of the company's debts. At the same time the German bank confirmed its willingness to acquire a 75% stake in the refinery for a period of 12 years as part of a consortium

consisting of Ukrainian financial and industrial enterprises, foreign investors and Russian oil companies.

In September 1997 the Ukrainian government issued a resolution stating that Ukraine would repay the \$160m debt that Linos owes to Westdeutsche Landesbank by imposing a \$2 fee for every tonne of crude oil refined at Linos.

### *Odessa refinery*

The Odessa refinery (in Russian: Odessky NPS, in Ukrainian: Odesky NPS) is located in the agricultural south of Ukraine, which is a major fuel consumer. The Odessa region alone consumes about 700,000 tonnes of fuel annually. As a result the Odessa refinery experienced the lowest production decline among all Ukrainian oil refineries in the period 1989-1996.

In 1994 the Odessa refinery put into operation a complex for hydrotreating of diesel fuel which led to a considerable increase in output. In 1997 plans for the construction of a catalytic cracking complex were developed. The management plans to increase the depths of refining from 58% to 80% with the new complex. The refinery hopes to reduce costs for crude oil supplies and transport costs for exports after the new oil terminal at Odessa port is finished.

By mid-1997 about 20% of the company had been sold to the Ukrainian population in certificate auctions. A further 6% is reserved for workers and managers. A 60% stake is designated for a tender meant to attract a strategic investor who will finance the planned modernisation. Under the present draft share distribution plan, 14% of the Odessa oil refinery will remain state property. The management hopes that the state's stake will be transferred to a newly created vertically integrated company Ukrshelfneftegaz (see company profile of Chernomorneftegaz) After production of Black Sea shelf oil has started, this would provide the refinery with a guaranteed supply of crude oil. (With information provided by Alfa Capital Ukraine.)

### *Prikarpatya refinery*

The Prikarpatya refinery (in Russian: Neftekhimik Prikarpatya, in Ukrainian: Naftokhimik Prikarpattya), situated in the town of Nadvirna in western Ukraine, is handicapped by the fact that it is not connected to Ukraine's pipeline network. A branch of the Druzhba pipeline is 124km distant from the refinery, and oil is transported by rail from the pipeline. In comparison with the Galichina refinery, which is of the same size as Prikarpatya, the latter is in a less favourable financial situation.

At present 36% of the company's shares are traded at the Ukrainian over-the-counter market. Interest in the shares began to rise in spring 1997 with the announcement of a presidential plan to transfer a 10% stake in the refinery to a newly created vertically integrated company Ukrneftegaz (see company profile of Ukrneft). This would provide the refinery with a guaranteed supply of crude oil and would reduce costs for selling products.



## Gas wholesalers

The main problem of Ukraine's domestic gas market is the inability of many consumers to pay for deliveries. In November 1997 total consumer gas debts stood at \$3.6bn. The crisis in Ukraine's industry and the low income of private households make it impossible for Ukrainian gas wholesalers to receive payments in time. As a result Ukraine's domestic gas wholesalers have proved unable to pay the gas producers (mainly Turkmenistan and Russia) for deliveries. As a result Ukraine's gas imports are permanently under threat of being cut off and the non-payment crisis has become the main obstacle to any reform of the domestic Ukrainian gas sector.

From 1992 until 1995 Ukraine's oil and gas imports were managed solely by the state which accumulated a debt of more than \$2bn for energy imports. When the Russian-Ukrainian energy trade was reorganised in 1995, it was agreed that private intermediaries in Ukraine would be responsible for most of the energy imports. As a result the Ukrainian state no longer gave guarantees on payments for energy deliveries, since this was now considered to be the concern of private enterprises. Nevertheless, the state kept control over gas imports by setting annual import quotas for all traders.

Under the new regulation three main private gas importers emerged in Ukraine. The two companies United Energy Systems of Ukraine (in Ukrainian: Yedini Energetichni Systemy Ukrainy) and Intergaz are responsible for most of the gas imports from Russia. A part of the gas imports from Russia is still managed by the Ukrainian state through the state owned company Ukgazprom. The import of Turkmen gas has been completely taken over by Itera-Ukraine. When Ukraine started negotiations with Uzbekistan for gas supplies in 1996, two further companies became active in the domestic Ukrainian gas market. Under an agreement signed in December 1996 the two companies, Ukrainian Gas company (in Ukrainian: Ukrainska Hazova Kompaniya) and Uzbekgazintez, became responsible for annual gas imports of about 7bn cu metres from Uzbekistan (see Table 6.9).

The gas wholesalers pay the producers in a mixture of cash and barter. But they often prove unable to pay for the cash component of the gas imports and from 1995 to 1997 they accumulated an aggregate debt of about \$700m. Ukraine's gas wholesalers also have to pay Ukgazprom for pipeline access.

Ukgazprom runs the Ukrainian gas distribution system which consists of pipelines, compressor stations, storage facilities, metering and distribution stations. Only the gas distribution system of the Crimea is run by the Crimean-based state company Chernomorneftegaz. The distribution of gas from the local distribution stations to the customers is in general managed by the subsidiaries of the state holding company Ukgaz. But Ukgazprom delivers some gas directly to large-scale industrial consumers.

In January 1997 Ukraine's Anti-Monopoly Committee allowed the setting up of the Gas Resources Consortium (in Ukrainian: Ukrainski Hazoresursni Konsortsium). The consortium was formed by Ukgazprom (30% stake), United Energy Systems of Ukraine (20%), United Energy International (UK, 10%) Ukgaz (10%) and Ukrneft

**Table 6.9: Gas suppliers in Ukraine's domestic market, 1997**

Company	Volume of gas supplies (bn cu metres)	Source of supplied gas	Main customers
Ukrghazprom	32.0	Russia	Industry and households in most parts of Ukraine
	14.0	Own production	
United Energy Systems of Ukraine	15.5	Russia	Industry and households mainly in eastern Ukraine
Itera-Ukaina	11.0	Turkmenistan	Industrial enterprises in a number of regions
Intergaz	10.0	Russia	Industrial enterprises in southern and eastern Ukraine
Ukrainian Gas Company	4.0	Uzbekistan	Industrial enterprises in Cherkassy, Rivne and Zhitomyr region
Uzbekgazintez	3.0	Uzbekistan	Industrial enterprises in Kirovhrad, Dnipropetrovsk and Zaporizhia region
Poltava Petroleum Company	0.5	Own production	State institutions in Poltava region
<b>Total</b>	<b>90.0</b>		

Source: *Neft i Kapital*, III/1997

(7%) together with another four Ukrainian companies and two Ukrainian banks. The consortium should optimise consumer gas supplies in Ukraine. In 1997 it received 10bn cu metres of gas from Ukrghazprom and delivered 8bn cu metres to industrial enterprises and the remainder to private households.

It is planned to modernise gas distribution to domestic customers in 1998. The project, which will be financed by a \$100m loan from the World Bank, is expected to promote gas conservation efforts by upgrading and increasing the use of customer metering, reduce distribution costs by rehabilitating gas distribution systems and support the commercialisation of local gas distribution companies. Ukraine hopes to attract international energy corporations possessing the latest technology to reform its gas sector. In summer 1997 Ukrghazprom formed a joint venture with Hovard Energy of the US which is to take part in the reconstruction of the distribution network. The right to trade and install gas meters was exclusively granted to Ukrghaz, which is permitted to co-operate with other companies on a contract basis if necessary.



According to a plan presented by the Ukrainian government in August 1997, traders will have to bid by tender for the right to distribute gas and they will have to pay for distribution licences. But the new system will not be implemented before 1999.

### *United Energy Systems of Ukraine*

The Ukrainian financial group United Energy Systems of Ukraine (in Ukrainian: Yedini Energetichni Systemy Ukrainy) was founded as a small private enterprise in 1991. The Dnipropetrovsk-based company later expanded rapidly and is said to have profited considerably from protection by the so-called Dnipropetrovsk clan which began to dominate Ukrainian politics after Leonid Kuchma won Ukraine's presidential elections in summer 1995 (see region's profile in Chapter 2). United Energy Systems of Ukraine was said to have an especially close relationship with Pavlo Lazarenko, who was prime minister from May 1996 until June 1997.

In 1997 United Energy Systems of Ukraine imported 15.5bn cu metres of gas from Russia for distribution in Ukraine and planned to import the same amount in 1998. Moreover, the company participates in the Gas Resources Consortium which distributed a further 10bn cu metres of gas in 1997 and has plans to modernise the domestic gas distribution system in Ukraine.

United Energy Systems of Ukraine is also active in metal production and machine building. In 1996 it produced more than 1.5mt of steel (10% of total Ukrainian production). In addition, the company is a major pipe producer. In 1996 it produced 0.5mt of pipelines (25% of total Ukrainian production), 80% of which were exported, mainly to Russia. In early 1997 United Energy Systems of Ukraine set up a Ukrainian-Russian joint venture for the construction of large diameter oil and gas pipelines.

After Lazarenko was replaced by Valery Pustovoitenko as prime minister, United Energy Systems of Ukraine fell out with the government. Its acquisition of a stake in the Khartsyzsk pipe plant was blocked and the company underwent investigations by several government agencies including a rigorous two-week financial audit in July 1997. Yulia Tymoshenko, the former head of the company, and Lazarenko founded an anti-government party in September 1997.

Gas distribution contributed about 25% of the company's total turnover of \$10bn in 1996. In that year the company imported 24.4bn cu metres of gas from Russia. The sum of \$2.11bn for the imports was fully paid for, with half of the payment taking the form of goods (mainly machinery and pipelines). Debts of domestic customers to United Energy Systems of Ukraine, on the other hand, amounted to \$0.5bn in early 1997. This may be why the company accumulated a debt of more than \$0.1bn to Russia's Gazprom in the first half of 1997, which was taken by Russia as a reason for a temporary halt to gas supplies. According to the government plan for the domestic gas market (as of September 1997) United Energy Systems will not be allowed to work in the market in 1998.

### *Itera-Ukraine*

After the restructuring of gas imports to Ukraine in 1995, the company Itera-Ukraine, a Ukrainian-American joint venture, became the sole Ukrainian importer of Turkmen gas. In January 1996 the Turkmen president, Saparmurad Niyazov, had set up the consortium Turkmenrosgaz for gas exports from Turkmenistan. The consortium was formed by the Turkmen oil and gas state company (51% stake), Russia's Gazprom (45%) and Itera-Ukraine (4%).

The consortium delivered Turkmen gas through Russian pipelines to former Soviet republics, with Ukraine alone accounting for about 75% of Turkmen gas exports in 1996. Itera's inability to pay for gas deliveries to Ukraine, therefore, caused a major crisis in the consortium. As of June 1997 Itera's debts stood at \$200m for gas transported to Ukraine in 1996 and at \$120m in cash and \$117m in goods (mainly wheat) for deliveries made in 1997.

In March 1997 Turkmenistan reacted by cutting off gas supplies to Ukraine and Itera was now provided with Russian gas from Gazprom to meet its most urgent obligations on the Ukrainian market. The Turkmenrosgaz consortium began to crumble on 17 June 1997, when the board of directors expelled Itera. Since Russia's Gazprom was also in arrears for past gas supplies, the Turkmen president decided a week later to disband the consortium because of its poor performance. Moreover, Turkmenistan declared that gas deliveries to foreign countries, including Ukraine, would only be resumed after gas debts have been paid in full.

Hence the future of Itera-Ukraine remains unclear. Ukraine intends to import 15bn cu metres of gas from Turkmenistan in 1998, but has given responsibility for the imports to the state holding company Ukgaz. Ukgaz, though, seems to be unable to fulfil that task since it lacks infrastructure as well as experience. Gazprom has declared that it will continue to provide Itera with Russian instead of Turkmen gas. Itera, on the other hand, announced in October 1997 that the Turkmenrosgaz consortium was still operating.

### *Intergaz*

Intergaz (in Ukrainian: Interhaz) was set up as a closed joint stock company in November 1995 by Ukrainian companies together with the American firm ADI. In January 1996 Intergaz managed to obtain a licence for gas imports of 10bn cu metres from Russia. Thus Intergaz became the third largest private gas wholesaler in Ukraine.

Intergaz developed a special scheme for payments to Russia's Gazprom. The payments Intergaz received from its more liquid customers were offered to industrial customers with payment difficulties in the form of short-term credits. These credits allowed the enterprises involved to keep up production and the credits were repaid with products. Intergaz then sold the products to those Russian regions where Gazprom had debts to the regional budget. The amount of Gazprom's debts paid off by deliveries from Intergaz was credited to the account of Intergaz for Russian gas deliveries. Nevertheless, Intergaz (like United Energy Systems of Ukraine) had accumulated debts of more than \$100m to Gazprom by mid-1997.



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A good source for up-to-date information on the subject is *Pipeline News*, a weekly e-mail digest intended to track significant developments in energy policy, pipeline construction and oil- and gas-related investment opportunities in the former Soviet Union. *Pipeline News* is distributed free of charge to regular subscribers. For subscription information send an e-mail to [jdelay@new-europe.gr](mailto:jdelay@new-europe.gr).

Russian-Ukrainian relations in general are described in Chapter 2. The relevance of foreign energy supplies for the Ukrainian economy is examined in Chapter 4. The state and future of Ukraine's transit pipelines, and the future prospects of Ukraine's search for alternative oil and gas suppliers, are analysed in Chapter 7.

### Development of domestic resources

The geological position of Ukraine's oil and gas deposits is described in Chapter 1. The general conditions for foreign investment in the Ukrainian energy sector are examined in Chapter 3. The information on joint ventures is based on the author's own research. No responsibility is taken for the accuracy and completeness of the information given. A good source for up-to-date information about ongoing and planned projects is *Pipeline News* (see above).

## **Company profiles**

There is no comprehensive guide to Ukrainian oil and gas companies. Extensive information on Ukraine's refineries, however, was published in the Ukrainian journal 'Gaz & Neft', No. 9/1997.

Where indicated, additional information was obtained from the investment and brokerage company Alfa Capital Ukraine, 15 Bogdan Khmeltsky Str., 252001 Kiev, Ukraine, Tel: +380 44 224-1915, Fax: +380 44 246-4480, e-mail: office@acapital.kiev.ua. Alfa Capital Ukraine is a subsidiary of the Russian Alfa group and one of the leaders in the Ukrainian market. Alfa Capital maintains a current database with information on over 9,000 Ukrainian companies.

Details of companies and state institutions relevant to the Ukrainian oil and gas sector are given in the address section of Chapter 3.



## CHAPTER 7: TRANSIT PIPELINES<sup>1</sup>

### THE UKRAINIAN SECTION OF THE EURASIAN PIPELINE NETWORK

#### Oil pipelines

At present there are two pipeline systems for oil transits through Ukraine: the MDOP—Main Dnieper Oil Pipelines (in Ukrainian: Prydniprovski Magistralni Truboprovody) and the Druzhba (Friendship) pipeline.

#### *MDOP and Eximnesteprodukt*

The MDOP are part of the pipeline system that runs from Siberia and Kazakhstan to the Black Sea coast. On Ukrainian territory the MDOP have a total length of 2,310km (including extensions) and an annual total capacity of 104.4mt. The capacity utilisation rate stood at 87% in 1996. The transit capacity of the MDOP is 44mt, since the pipelines also deliver oil to four Ukrainian refineries. The MDOP have two main transit routes. One runs from the Russian towns of Perm, Samara and Saratov through Ukrainian territory to the Russian port of Novorossiisk and has an annual capacity of 30mt and a length of 250km on Ukrainian territory. The other main transit pipeline runs from the Russian towns of Michurinska and Samara to the Ukrainian port of Odessa. This stretch has an annual transit capacity of 14mt and a length of about 900km on Ukrainian territory.

The MDOP deliver more than 20mt of oil annually from Saratov to Novorossiisk. The pipeline was constructed in Soviet times, and so the pipeline runs 250km on Ukrainian territory close to the Russian border. The fact that Ukraine has become an independent state has brought considerable increases in transport costs for oil deliveries from western Siberia to the Russian port of Novorossiisk. In 1996 Russian oil companies had to pay \$75m in transit fees to MDOP. To reduce transport costs Russian companies are considering building a new eastern branch of the Saratov—Novorossiisk pipeline that would avoid Ukrainian territory. If this plan were realised MDOP would lose their major source of income, but it is unlikely that the new pipeline will be built before the fate of the Baku—Novorossiisk pipeline has been determined.

The export of Russian oil delivered through the MDOP to the Black Sea port of Odessa is managed by the Ukrainian company Eximnesteprodukt in co-operation with Odessa Oil Harbour. The company is one of the biggest oil transshipment companies in Ukraine, with an annual capacity of 14mt. It accounts for up to 10% of

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<sup>1</sup> All figures for oil include condensate. Output figures in tonnes need to be multiplied by a constant factor of 7.35 to be converted into barrels.

All figures for natural gas are for volumes at 20°C. Whereas most countries measure gas volumes at 15°C, statistics of former Soviet republics give volumes at 20°C. At 20°C, gas volumes are about 7% higher than at 15°C.

Russian oil exports to countries outside the former Soviet Union. In 1996 Russia exported 8mt of oil through Eximnefteprodukt. In late 1996 Russia concluded an intergovernmental agreement with Ukraine to transship 11mt of oil through Eximnefteprodukt in 1997. This allows the company to operate at a profit (see Table 7.1) and, according to a forecast by Alfa Capital Ukraine, increases in tariffs for oil transshipment will enable the company to increase profits by \$2m a year.

**Table 7.1: Eximnefteprodukt – key indicators, 1995-97**

Indicator	1995	1996	1997 <sup>1</sup>
Transshipment volume (mt)	7.50	8.00	11.00
Net sales (\$m)	35.29	27.98	39.60
Net profit (\$m)	21.31	16.07	22.40
EPS (\$)	3.23	2.44	3.40
P/E	2.48	2.74	1.90
P/S	1.50	1.57	1.08
1 Estimate.			
Source: Alfa Capital Ukraine			

However, the future prospects of Eximnefteprodukt depend on the further development of the Eurasian oil transport system. If Ukrainian plans to import oil from the Caspian Sea or the Middle East succeed, Eximnefteprodukt is likely to increase its profits considerably after 1998. But if Ukraine continues to transit only Russian oil, Eximnefteprodukt may experience stronger competition from the Russian port of Novorossiisk, especially if the Baku-Grozny-Novorossiisk pipeline does not work at the planned capacity. In that case Novorossiisk, which is currently constructing an additional oil terminal, will continue to depend on Russian oil deliveries from western Siberia.

Eximnefteprodukt is organised in the form of an open joint stock company. In late 1995, 34% of Eximnefteprodukt was sold to the company's workers and to private investors. The company's shares are now traded on the secondary market. There are plans to sell a further 15% stake in Eximnefteprodukt through a tender, and 51% of the company will remain state property.

### ***Druzhba pipeline***

The Druzhba pipeline delivers oil from western Siberia to eastern and central Europe. The northern branch of Druzhba runs from Russia through Belarus to Poland and Germany. The southern branch can transport Russian oil through Belarus and Ukraine to customers in the Czech Republic, Slovakia, Hungary, Croatia and Serbia. The southern Druzhba branch runs from the Belorussian-Ukrainian border between the towns of Mosyr and Korosten through the western Ukrainian town of Brody to the export points at Fenestek (Ukrainian-Hungarian border) and at Budnovts (Ukrainian-Slovakian border). In 1996 more than 50 Russian companies used the



southern Druzhba branch for oil deliveries of 6.21mt of oil to the Czech Republic, 5.22mt to Slovakia and 5.21mt to Hungary.

The Ukrainian section of the Druzhba pipeline has a total length of 1,500km (including extensions) and an annual transit capacity of 25mt. The length of the direct transit pipeline is 720km. Druzhba also supplies two smaller western Ukrainian refineries with oil. The capacity utilisation rate of Druzhba stood at 64% in 1996.

### ***Ukrtransneft***

Until mid-1997 the two transit pipelines in Ukraine were run by two different companies (MDOP and Druzhba) under the control of the State Committee on Oil, Gas and Oil Refining. In July 1997 the Ukrainian State Anti-Monopoly Committee approved the foundation of the state company Ukrtransneft (in Ukrainian: Ukrtransnafta), which took over the Ukrainian section of both oil transit pipelines. The main task of Ukrtransneft will be the extension of the transit pipeline network in Ukraine and the foundation of an international pipeline consortium for the transport of Caspian and Middle Eastern oil.

**Table 7.2: Druzhba, MDOP and Ukrtransneft – key indicators, 1996**

Indicator	Druzhba	MDOP	Ukrtransneft <sup>1</sup>
Amount of transported oil (mt)	17.7	47.5	65.2
Of that transit (mt)	16.7	36.9	53.6
Earnings (\$m)	91.5	133.4	224.9
Maintenance costs (\$m)	14.5	33.1	47.6
Net profit <sup>2</sup> (\$m)	56.4	66.3	122.7
1 Hypothetical, since Ukrtransneft was set up only in 1997.			
2 After taxes.			
Source: <i>Gas &amp; нефть</i> (Infobank), 2/1997; author's calculation			

### ***Network expansion plans***

In order to transit Caspian or Middle Eastern oil, which would be delivered via the Black Sea, Ukraine has developed plans to construct an oil terminal at Odessa and to connect the terminal with the southern branch of the Druzhba transit pipeline through an Odessa-Brody pipeline. In a second stage an extension to Poland will be built to connect Odessa with the northern branch of Druzhba.

In a first step the Odessa oil terminal would allow Ukraine to diversify its energy supplies and to lessen the dependence on Russian deliveries. This is considered to be one of Ukraine's main strategic tasks and an important contribution to the country's national security (see Chapter 6). In a second step Ukraine would be able to become a major transit country for Caspian and Middle Eastern oil after the connection pipeline to Druzhba has been finished. This would provide the country with considerable earnings.

The Odessa oil terminal is planned to have an annual capacity of 40mt once completely finished. Ukraine's need for oil imports, on the other hand, is expected to remain below 20mt until the year 2010. This would leave a capacity of 20mt available for onward transit. Assuming present capacity utilisation rates, 8mt could be transported through the southern Druzhba branch and the remaining 12mt would then be passed on to the northern branch. If Ukraine charged the current Druzhba rate of \$0.72 for the transport of 1 tonne of oil over 100km it would earn about \$130m annually from the new pipeline and, allowing \$30m for costs, could have net profits of up to \$100m. The transit of 1 tonne of oil from Odessa to the Ukrainian border with Hungary or Slovakia would cost about \$6.50 under such a scenario, compared with \$5.20 currently charged by Druzhba for the transit of oil from the Belarussian to the Hungarian or Slovakian border. The main problem would be that the costs for shipping the oil across the Black Sea might make it too expensive to compete successfully in the European market, especially since none of the countries involved has the necessary fleet of oil tankers. Depending on the kind of ships used and the amount of oil transported, the price for shipments across the Black Sea would range from \$6 to \$26 per tonne of oil (see below).

In 1994 Ukraine began building the oil terminal at the Black Sea port of Pivdenny near Odessa. The first stage, with a capacity of 12mt of oil, will be commissioned in 1998. Work on the 670km pipeline to Brody was also started, but by early 1997 only 40km had been laid. According to Ukraine's plan, a total of 200km will be constructed by early 1998.

The main problem hampering the construction of the oil terminal and the Odessa-Brody pipeline is the lack of funds. Total costs may reach \$900m. By early 1997 Druzhba, which was responsible for the pipeline construction, had invested no more than \$30m. To intensify these efforts and to provide additional funds Ukrtransneft was founded and money from the MDOP can now be used for the construction, too. Nevertheless, there is no chance of completing the project in the near future without financial help from foreign investors.

### *Tariffs*

The only foreign customer using Ukrainian oil transit pipelines so far is Russia. Accordingly the transit tariffs set by Ukraine are part of the political conflict over the Russian-Ukrainian energy trade. First, Ukraine can use earnings from the transit pipeline to repay parts of its debt for Russian energy supplies. Second, and more important, Ukraine can react to Russian pressure or to price increases for Russian energy deliveries by increasing transit tariffs.

On 1 January 1996 Druzhba increased its tariff for the transit of Russian oil by 16%. Russia stated that Ukraine had acted unilaterally without warning its Russian customers of the forthcoming increase. Ukraine's State Committee on Oil, Gas and Oil Refining denied the accusations and reacted by cutting off Russian oil supplies to eastern Europe. This compelled the private Russian oil exporters to reach an agreement with the Ukrainian Druzhba company. After three days, deliveries to Hungary were resumed and after nine days the pipeline to Slovakia was reopened, too. Ukraine's transit tariffs are still not above average transit tariffs charged in the



former Soviet Union and they are considerably lower than east European tariffs (see Table 7.3).

**Table 7.3: Oil transit tariffs in the Eurasian region, 1996**

Country	Transit pipeline	Tariff (\$/100km)	Length of pipeline section (km)
Russia	Baku-Novorossiisk <sup>1</sup>	0.92	1,500
Russia	Western Siberia-Odessa <sup>2</sup>	0.82	3,900
Russia	Western Siberia-Novorossiisk <sup>2</sup>	0.65	4,400
Russia	Druzhba (Russian section) <sup>2</sup>	0.63	4,700
Ukraine	MDOP (to Odessa)	0.44	900
Ukraine	MDOP (to Novorossiisk)	0.80	300
Ukraine	Druzhba (southern branch)	0.72	700
Slovakia, Czech Republic	Druzhba (southern branch)	1.50	600
Hungary	Druzhba (Balkan extension)	1.50	400
Poland	Druzhba (northern branch)	1.30	700

1 Not in operation in 1996, tariff according to Azeri-Russian agreement.  
2 According to new tariffs set in October 1996 by Russia's state pipeline company Transneft.

Source: *Gas & нефть* (Infobank), 1+7/1997; *Finansovye Izvestiya* 6 May 1997

## Gas pipelines

At present 95% of Russia's gas exports to Europe pass through Ukraine. The Ukrainian section of the transit pipeline network is managed by Ukrgazprom (see company profile in Chapter 6). The company is responsible for 34,000km of main gas pipelines, 80 compressor stations and 12 underground gas storage facilities. The main gas transit pipelines from Russia to Europe have an annual capacity of about 140bn cu metres.

### Routes

Four main transit pipelines run from western Siberia, central Asia and Moscow through the eastern Ukrainian Shebelynka field to western and southern Ukraine. A further gas pipeline running through the Belarussian capital, Minsk, meets the Ukrainian pipeline network in western Ukraine, south of Lviv. From western Ukraine gas is delivered to central and western Europe. The gas pipeline running through southern Ukraine transports gas to customers in south-eastern Europe and Turkey.

The role of Ukraine in the Eurasian gas transit network will change significantly after Russia's gas monopolist Gazprom has finished the Yamal-Europe pipeline which will run from Russia through Belarus and Poland to Germany. Russian gas deliveries to western and north-central Europe can then bypass Ukraine. Through the already existing western Ukrainian gas pipelines Gazprom will continue to supply gas to

European customers, especially in Slovakia, Austria, Hungary and the former Yugoslavian republics.

The southern Ukrainian gas pipeline will not be affected by the Yamal-Europe pipeline. Instead, Gazprom plans to modernise the pipeline which runs from southern Ukraine through Moldova, Romania and Bulgaria to Greece and Turkey. In mid-1996 Gazprom (37% stake), Ukgazprom (37%) and the Transbalkan consortium of Turkish companies (26%) formed the joint venture, Gaztransit, which will manage the Ukrainian section of the gas pipeline. Gaztransit hopes to increase the pipeline's annual transit capacity from the current 20bn cu metres to about 40bn cu metres with the help of western investors.

A gas pipeline from Torzhok in Russia to Dolina in Transcarpathia was being built in 1986 when work was stopped because of contamination by the Chernobyl disaster; work is reported as about to be restarted (IEA, 1996).

### *Transit of Russian gas*

Whereas Ukraine's gas imports for domestic consumption are managed by a number of gas wholesalers, the transit of Russian gas through Ukraine is managed solely by Ukgazprom. At present the company transports about 120bn cu metres of gas annually from Russia to central and western Europe (see Table 7.4).

Russia's Gazprom pays the transit fees by delivering gas to Ukgazprom in a barter deal. In 1997 Ukgazprom received 32bn cu metres of Russian gas as payment for the transit of 126bn cu metres of Russian gas through Ukraine. Ukgazprom then sells the gas on Ukraine's domestic market (see Chapter 6).

**Table 7.4: Ukrainian gas transits, 1992-97**

	1992	1993	1994	1995	1996	1997 <sup>1</sup>
Gas transit (bn cu metres)	123	125	129	136	117	126
Transit tariff (\$ per 1,000 cu metres and per 100km)	0.09 <sup>2</sup>	0.08-1.62 <sup>2</sup>	0.54	0.66	1.75	1.75

1 Estimate.

2 Converted from original tariffs in Russian roubles at current exchange rates.

Source: *Gas & нефть* (Infobank), 11/1996; *Petroleum Economist*, May 1997

In past years Russia has repeatedly accused Ukgazprom of diverting gas from the transit pipelines for domestic use without notice and payment. Only during the Russian-Ukrainian conflict in 1993-94 when Russia cut off gas supplies to Ukraine several times did Ukraine officially admit that it had diverted gas from the transit pipeline. At that time the Ukrainian government declared this action to be in line with the relevant bilateral agreement. Later accusations were treated by Ukgazprom as attempts to portray gas transits through Ukraine as unreliable to attract investors for the Yamal-Europe pipeline. In late 1996 the conflict was defused when Gazprom



insured itself with Lloyds of London against the risk that Ukraine might divert gas from the transit pipelines. The amount of gas transported through Ukraine is now being controlled by metering stations.

### ***Modernisation of the pipeline system***

Ukrgezprom's main problem is the state of the transit pipelines. About a third of the length has already been in use for 23 to 48 years, and 45% of the gas pipelines have incomplete corrosion protection. Three-quarters of Ukrgezprom's compressor stations do not meet Ukraine's ecological standards. According to Ukrgezprom's estimate it will be necessary to spend more than \$1bn on the modernisation of the gas transmission network. To improve the transit pipelines the company has formed a joint venture with TransCanada Pipelines (Canada). Furthermore, Shell International Gas is seeking a 20% share in the transit pipelines according to an announcement made in summer 1997. Ukrgezprom is also seeking loans from the World Bank and the EBRD for the modernisation of gas transit pipelines. In 1998 the World Bank is expected to grant a \$200m loan for a gas transit project to rehabilitate compressor stations and pipelines on Ukraine's gas export routes.

### ***Gas storage facilities***

The total capacity of Ukraine's gas storage facilities is 58bn cu metres, with an active volume of 32bn cu metres and a maximum daily withdrawal rate of 260m cu metres. In 1996/97 less than half of this was being used, since Gazprom had considerably reduced its use of Ukrainian storage facilities. That is why Ukrgezprom has been trying to promote its abundant gas storage capacity as cheap facilities for European customers of Gazprom. The advantage of Ukrainian storage facilities is the low price charged for their use. Their main disadvantage is their position remote from west European markets. Thus, so far, Ukrgezprom has attracted only companies such as Hungary's MOL. But it is said that companies from Germany and France are also interested in Ukraine's storage facilities.

Ukrgezprom, at least, seems to believe in Ukraine's potential as a main gas storage depot for central and western Europe. A storage facility near Lviv is being expanded by 3bn cu metres by 1998. There are also plans under discussion to build a storage facility at the southern Ukrainian pipeline to south-eastern Europe and Turkey.

### ***Future prospects***

There are four main international projects which might change Ukraine's future role in the Eurasian oil and gas transport network:

- the extraction of Caspian oil for the world market. If Caspian oil producers decide in favour of a transit route through Ukraine, the country's role in oil transits will increase. However, if Caspian deliveries are all routed to the Russian port of Novorossiisk there will be spare capacities for oil from other sources, but transit of Russian oil through Ukraine is likely to decrease;

- the transit of oil from the Middle East through Turkey and Ukraine to central and western Europe. The realisation of this project would increase Ukraine's role in oil transits;
- the Yamal-Europe pipeline. This gas pipeline will allow Russian gas deliveries to western Europe to bypass Ukraine. The pipeline will, therefore, decrease Ukraine's role in gas transits. However, Gazprom's plans for a considerable increase in total gas deliveries to Europe leave an important role for Ukraine;
- the extraction of central Asian gas for the world market. In south-east European markets this gas might compete with Russian gas, transported through Ukraine.

These projects are now described in detail and their possible impacts on Ukraine are analysed.

## **OIL FROM THE CASPIAN SEA**

### **Export potential**

#### ***Deposits***

The concentration of the former Soviet Union on exploiting oil and gas deposits in Russia – rather than those in Azerbaijan, Kazakhstan or Turkmenistan – has left a significant share of unexploited deposits in these central Asian states. By 1993 geophysicists had discovered a total of 33 separate hydrocarbonate fields, 31 in the southern portion of the sea, with most of these deposits discovered in water depths of less than 200 metres, reflecting the current technology employed for such exploration. However, it now appears that bigger fields are situated further beneath the sea floor; 180 of the 930 wells drilled in the south Caspian found oil at depths of 5km or more. The discoveries about the geological structure of the Caspian suggest that oil and gas can be extracted at depths of between 6km and 8km, but it is also true that by the mid-1990s only 7% of the Caspian shelf has been explored, primarily in Azerbaijan.

Hence estimates of the total oil reserves of the Caspian cover a wide range from 5.4bn tonnes to 27.2bn tonnes of crude oil. These figures may increase if the seismic exploration of the Caspian shelf proceeds.

The level of the Caspian Sea has been successively rising and falling for centuries. At present the sea is rising alarmingly, by nearly 3 metres since 1991, endangering onshore oil fields and settlements near the coast.

#### ***Legal status of the Caspian***

Since the break-up of the Soviet Union the legal status of the Caspian Sea is no longer clear. Previously, the Soviet part of the Caspian Sea had an all-Union status and did not belong to the territory of any Soviet republic. The Iranian part was



defined by treaties between the Russian Soviet Republic and Persia (26 February 1921) and between the Soviet Union and Iran (25 March 1940). In 1992 the former Soviet republics became the legal successors of the Soviet Union but a decision on the legal status of the Caspian was not reached.

Kazakhstan and Azerbaijan argue that the Caspian is a sea and should therefore be divided into national sectors which each country has the right to exploit as it pleases. Kazakhstan even claims the status of an international sea for the Caspian, arguing that it is connected with the Baltic Sea by the river Volga and various channels. In that case a zone of 200 nautical miles (370.4km) could be claimed by each littoral state. Since the east-west length of the Caspian Sea is below 150 nautical miles, the equal distances principle would be used to determine national zones for economic exploitation. Whereas this solution would favour Kazakhstan, it would mean that the Azeri oil field, parts of the Chirag oil field and the Kyapaz (Serdar) oil field, which are all claimed by Azerbaijan, would lie in the Turkmen zone. Turkmenistan had initially subscribed to the Kazakh-Azerbaijani view but, as of late autumn 1996, espoused the Russian-Iranian argument. In summer 1997, however, Turkmenistan used the Kazakh view to protest the Azeri claim on the disputed oil fields. A similar conflict exists between Kazakhstan and Russia, since Russia plans to put to tender several offshore oil fields, which are located in the Kazakh sector according to the Kazakh interpretation of the legal status of the Caspian.

Russia and Iran have argued that the Caspian is a salt-water frontier lake and not a sea. If the Caspian is such a lake, any offshore energy reserves are, legally, the shared property of all littoral states. In this case the Caspian may either be divided into national sectors by extending national boundaries to the middle of the 'lake' or be declared a condominium, which means that those parts of the Caspian with a depth of more than 25 metres are subject to common responsibility and separate treaties on special aspects such as oil and gas extraction. In case of a division into national sectors no currently known offshore oil fields would be part of the Russian or the Iranian sector. Russia, therefore, prefers the condominium solution which offers it the chance to reach more favourable agreements with the help of political pressure. Accordingly, Russia has asserted that no littoral state has the right to extract natural resources beyond the boundary of a 10-mile (18.52km) coastal zone and that offshore resources may be exploited only on the basis of an agreement concluded by all littoral states.

In November 1996, Russia modified its position by proposing that the Caspian Sea be divided into zones. Each littoral state would have the exclusive use of resources within its territorial waters, which would be extended from 10 to 45 nautical miles (18.52 to 83.34km). Resources beyond that point would be jointly used by all five countries. On 12 November 1996 representatives from all littoral states except Azerbaijan signed an agreement on the status of the sea. The agreement granted each state an exclusive economic zone extending for 45 nautical miles offshore. The resources beyond the 45-mile zone would be subject to joint ownership. Azerbaijan's oil riches lie beyond the 45-mile zone and that country's representative did not sign the agreement.

### *US sanctions on Iran*

The sanctions imposed on non-US companies under the Iran and Libya Sanctions Act of 1996 extend only to developments in Iran's Caspian territory, not to Caspian development projects located in the four other littoral states in which Iranian companies participate. But US firms cannot participate in any project of the other four littoral states if an Iranian company is a joint investor. The condominium status of the Caspian Sea could disqualify US companies under the current rule from participation in any Caspian Sea project beyond the coastal zone because it would generate oil and gas income for Iran. Moreover, under the existing policy US companies would not be able to participate in any project that uses Iran as a transit country. After a more liberal candidate had won the Iranian presidential election in spring 1997 the US government modified its pressure for sanctions. In July 1997 the US decided not to oppose western involvement in the Turkmenistan-Iran pipeline project. Chevron is permitted to ship by tanker oil from its deposits in Tengiz (Kazakhstan) in a swap arrangement for Iranian oil to be shipped from the Gulf ports on Chevron's account.

### *Potential position on world markets*

Production costs in the countries of the Gulf, Iran, Iraq, Kuwait and Saudi Arabia are less than \$14.70/t, compared with more than \$73.50/t in the North Sea. Including the costs of investment and transport, Caspian oil is much more expensive than oil from the North Sea. By the end of 1996, crude oil from Kazakhstan's Tengiz field was exported at an average price of \$147/t. Accordingly, the relevance of Caspian oil for the world markets should not be overestimated. The exploitation of Caspian oil resources will reduce the growth of the Middle East's share in world oil exports, but it is unlikely to reverse or even arrest it. Caspian oil cannot replace Gulf oil in terms of quantity, cost of production or market access.

**Table 7.5: Net oil exports from the Caspian Sea region, 1990-2010**

	mt		
	1990	2000	2010
Azerbaijan	- 4	5-15	20-40
Kazakhstan	8	2-9	15-19
Turkmenistan	0	0	1-3
<b>Total</b>	<b>4</b>	<b>7-24</b>	<b>36-62</b>
Note: Other figures for oil exports given in the text are the estimates of oil producers (as indicated). Their estimates tend to be more optimistic than those presented in this table.			
Sources: <i>Energiya</i> (Russian Academy of Sciences), 12/1996, <i>Oil &amp; Gas Journal</i> 13 October 1997			



Nevertheless, the Caspian region gets much attention because in other regions of the world the work of the international oil companies is becoming more difficult. For example, operations in the Middle East are complicated by the US sanctions against Iran, and by the UN embargo against Iraq. At the same time, for many oil companies the deposits of their main extraction area, as in the case of the Gulf of Mexico, are nearly exhausted. The Caspian is the only region that has the potential to be the next North Sea and the only region open to foreign investment, free of US or multilateral sanctions.

But export difficulties have blocked the economic progress in the whole Caspian region. The pipeline network in the former Soviet Union is, as already noted, technically and logistically below modern standards. The big pipelines are not where they are currently needed. All existing pipelines from the region go through Russia, either across Transcaucasia to Russian Black Sea ports or across Russia and Ukraine to central and western Europe. This causes a number of problems. First, Russia can put political pressure on Caspian oil producers by closing transit pipelines. Second, Russia can use its monopoly on transit pipelines to charge high prices. Third, Russia's transit capacity is limited and the country is likely to give preference to the transport of domestic oil. Fourth, during the war with Chechnya the main oil route from Azerbaijan to the Black Sea was cut, but then reopened in late 1997, subject to a high tariff to the Chechen government. Fifth, high quality Caspian oil might be mixed with lower quality Russian oil in the Russian pipeline system.

Moving crude oil over long distances will always be expensive. Most of the big fields in Russia and the Caspian region lie thousands of kilometres from foreign markets. It may be suggested, however, that, in the end, the international oil companies active in the Caspian region will support pipelines almost regardless of the cost, since political risk is considered to be a far more important point. Only when political risks are equal will the cost of the pipeline become decisive. Accordingly, the assessment of political risks is a decisive factor in the selection of an export route for Caspian oil. Since it is much more complicated to estimate political risk than to estimate cost and since the political situation in the region is changing rapidly, Caspian oil producers have been slow to make decisions on export routes.

## **Country profiles**

### ***Azerbaijan***

A known amount of 476.2mt of crude oil lies in the 78,800 sq km section of the Caspian Sea over which Azerbaijan claims sovereignty. This is a conservative estimate, because deepwater areas have not yet been explored. The total reserves have not yet been confirmed. Estimates range from 1.4 to 3.5bn tonnes of crude oil. Detailed 3D seismic surveys, examining oil and gas structures at depths of up to 8km, are well under way. Seventy-seven as yet undrilled structures have been identified in Azerbaijan's portion of the Caspian Sea which may contain oil or gas; 53 of these structures lie at depths of between 500 and 700 metres.

In 1995 17 offshore fields were in production in Azerbaijan, extracting about 8mt of crude oil. At the same time only 10 onshore fields were extracting oil, with a total

onshore production of 1.38mt/yr of crude oil. The resulting total production of 9mt was not even enough to satisfy domestic demand, which amounted to 10bn tonnes in 1995.

Since the late Soviet period Azerbaijan has been a net importer of oil. After the break-up of the Soviet Union, Azerbaijan not only wants to become independent from foreign oil deliveries but has developed plans to become an important oil exporter to promote economic growth. As early as 1990 Azerbaijan began negotiations with a number of international oil companies, headed by British Petroleum, on developing its oil reserves. As early as May 1993 Azerbaijan's state oil company Socar signed a declaration on the so-called unitised development of Guneshli, Azeri and Chirag deposits in co-operation with a western consortium. In March 1993 an Azeri-Turkish agreement worth \$1.4bn on building an oil pipeline from Baku to the Turkish Mediterranean shore via Iranian territory was signed.

However, most of the earlier agreements did not materialise because of a severe deterioration in the military-political situation of the region. In 1993 neither the Russian government nor a Russian oil company was involved in the development of Azerbaijan's offshore oil deposits. Russia, seeing itself as hegemonic power in the Caspian region, provoked a civil war. In June 1993 the pro-western government in Azerbaijan was overthrown and under the new president, Heidar Aliyev, Azerbaijan joined the Commonwealth of Independent States (CIS). To please Russia, Azerbaijan suspended the agreement with the international oil consortium. In February 1994 the Russian oil company Lukoil was invited to take part in the consortium.

Nevertheless, western companies are dominant in Azerbaijan's oil production. The country's national state company Socar, the Russian company Lukoil and, to a lesser degree, the Iranian Oil Industries Engineering and Construction (OIEC) are also of relevance (see Table 7.6).

### ***Kazakhstan***

Kazakhstan's recoverable reserves of crude oil and gas condensates amount to 3bn tonnes. Estimates of the potential of the north Caspian were put at up to 10bn tons of oil in mid-1997. Conservative estimates placed oil reserves at between 3.5 and 4bn tonnes. Of 120 discovered oil fields in Kazakhstan in early 1996, 112 are in the west, mainly concentrated in the Aktau, formerly Shevchenko, and Atyrau, formerly Guryev, regions near the east coast of the Caspian Sea. All fields with reserves larger than 100mt lie in these two areas. The waters of the north-eastern Caspian account for over 90% of Kazakhstan's probable hydrocarbons reserves.

Although several huge fields have been parcelled out to international developers in Kazakhstan, transport obstacles have damped hopes of a rapid surge in local production. Kazakhstan's oil production stood at 23mt in 1996, 3.5mt less than in 1991.

Foreign investment in Kazakhstan's oil industry reached a total of \$2.26bn in 1991-96. Of this, the Tengizchevroil joint venture accounts for around \$1bn. Until mid-1997 foreign companies had committed themselves to investing more than \$60bn in the coming years. Joint oil-producing ventures extracted 5.8mt of crude oil in Kazakhstan in 1996. Tengizchevroil alone provided 4.97mt or 22% of the Kazakh total.



**Table 7.6: Major oil fields in Azerbaijan**

Field	Estimated oil reserves (mt)	Operating company
Apsheron	1,200	Chevron, Total, Socar <sup>1</sup>
Azeri, Chirag, Guneshli	700-1,000	Azerbaijan International Operating Consortium (AIOC) <sup>2</sup>
Shakh Deniz	200-400	Shakh Deniz Consortium <sup>3</sup>
Inam	200	Amoco, Socar
Karabakh	140	Caspian International Petroleum Company (Cipco) <sup>4</sup>
Ateshgayakh, Yavan Tapa, Mugan Deniz	100	Itochu Corporation (Japan)
Lenkoran Deniz, Talysh Deniz	80-100	Lenkoran Talysh Consortium <sup>5</sup>
Yalamar	70-100	Lukoil, Socar
1 Socar, Azerbaijan (50%), Chevron, US (30%), Total, France (20%).		
2 British Petroleum (17.1267%), Amoco, US (17.01%), Unocal, US (10.0489%), Lukoil, Russia (10.0%), Socar, Azerbaijan (10.0%), Statoil, Norway (8.5633%), Exxon, US (8.0006%), Turkish Petroleum AO (6.75%), Pennzoil, US (4.8175%), Itochu, Japan (3.9205%), Ramco, UK (2.0825%), Delta Nimir, Saudi Arabia (1.68%).		
3 British Petroleum (25.5%), Statoil (25.5%), Elf, France (10%), Lukoil, Russia (10%), OIEC, Iran (10%), Socar, Azerbaijan (10%), Turkish Petroleum AO (9%).		
4 Lukoil, Russia (32.5%), Pennzoil, US (30%), Agip, Italy (30%), and Socar, Azerbaijan (7.5%).		
5 Elf, France (40%), Socar, Azerbaijan (25%), Total, France (10%), Deminex, Germany (10%), OIEC, Iran (10%), Petrofina, Belgium (5%).		
Source: <i>Petroleum Economist</i> , July 1997 and December 1996; <i>Energy Economist</i> , December 1996, <i>Pipeline News</i> ; RFE/RL Newslines; Petroleum Report 19-97		

The Tengiz and Korolyov onshore oil fields are considered to be the largest undeveloped crude oil fields in the world. Proved reserves at Tengiz amount to between 0.8bn and 1.2bn tonnes of oil. Possible resources are estimated at up to 5bn tonnes. In April 1993 the joint venture Tengizchevroil was created with Kazakhstan's Tengizmunaigaz and Chevron (US) each holding a 50% stake. The agreement, with a validity of 40 years, grants 80% of the profits from oil sales to Kazakhstan and the remaining 20% to Chevron. The US oil company Mobil bought half of Kazakhstan's interest for about \$1bn in April 1996. In January 1997 the Russian company Lukoil bought a 5% interest in the Tengiz field from Chevron for about \$200m. The Arco-Lukoil venture Lukarco has invested in the project as well.

Tengizchevroil is hoping to see crude oil production at Tengiz rise from 5mt in 1996 to 12mt in 1999 and 35mt in 2010. The main problem of Tengizchevroil is the restricted market access which results from the lack of pipeline capacity.

**Table 7.7: Major oil fields in Kazakhstan**

Field	Estimated oil reserves (mt)	Operating company
Caspian Sea Shelf	8,200	KazakhstanCaspShelf (KCS) Consortium/North Caspian Project <sup>1</sup>
Tengiz and Korolyov	5,000	Tengizchevroil <sup>2</sup>
Begesh contract zone	1,100	American International Petroleum Corp.
Uzen	200-900	Chinese National Petroleum Co (CNPC), Uzenmunaigaz (Kazakhstan)
Aktyubinsk	500	Chinese National Petroleum Co (CNPC), Aktyubinskmunaigaz (Kazakh)
Mangistau	300	Central Asian Petroleum (Indonesia)
Karachaganak	300	Karachaganak International Consortium <sup>3</sup>
Karazhanbas	200	Triton-Vuko Energy Group (Canada)
<p>1 Agip, (Italy), British Gas, an alliance of British Petroleum and Statoil (Norway), Mobil (US), Shell (UK), Total (France), Kazakhmunaigaz (Kazakhstan). Each partner holds a 14.3% share.</p> <p>2 Chevron, US (45%), Mobil, US (25%), Tengizmunaigaz, Kazakhstan (25%), Lukoil, Russia (5%).</p> <p>3 Agip, Italy (32.5%), British Gas (32.5%), Texaco, US (20%), Lukoil, Russia (15%).</p> <p>Sources: <i>New York Times</i>, 12 Feb. 1997; Friedemann Müller, <i>Osteuropa-Wirtschaft</i>, p. 270; <i>Pipeline News</i></p>		

### Possible export routes for Caspian oil from Azerbaijan

The World Bank has granted Azerbaijan a loan for upgrading its pipeline network. Moreover, Turkey and Georgia received World Bank loans for feasibility studies concerning pipeline construction options. The World Bank has pointed out that it will have no hand in deciding which of the pipelines will actually be built. The Inogate project of the European Union's Tacis programme also provides funding for the renovation of the Caspian and Transcaucasian pipeline network and for feasibility studies.

There are many different proposals for the transport of oil from Baku (Azerbaijan) to the world markets, but only three of them are considered to be major competitors:

- Baku-Russia (Novorossiisk Black Sea port);
- Baku-Georgia (Black Sea ports);
- Baku-Georgia (or Armenia)-Turkey (Ceyhan Mediterranean port).

However, the shortest and most cost efficient route for Azerbaijan's oil exports would go to Iran. The closest link to the existing Iranian pipeline system is only



113km from offshore Azerbaijan fields. But because of the US sanctions against Iran this option cannot be realised.

### ***Baku-Novorossiisk***

In economic terms, the Russian export route out of Azerbaijan is the most viable. The pipelines were already in place and required only around \$50m to be spent on upgrading. The initial transit capacity of the pipeline to Novorossiisk is 5mt/yr. This figure could easily be raised to 15mt/yr. In January 1996 Russia and Azerbaijan signed an intergovernmental agreement to transport Caspian oil from Baku to Novorossiisk once the first 'early oil' has been produced by the AIOC. (Early oil is a term used for initial oil production of up to 5mt of crude oil a year. The AIOC expects to extract early oil from 1997 to 2001.)

Under the original agreement from January 1996, the AIOC is required to transport the oil only to the Azerbaijani-Russian border. From there the oil is transported through Russia under a separate agreement between Azerbaijan's government and the Russian pipeline company Transneft. Under this agreement, Russia will receive \$15.67 transit fees for each tonne transported through its territory.

The main hindrance to the realisation of the agreement became the fact that the Russian section of the Baku-Novorossiisk pipeline runs through Chechnya. After the Russian invasion failed a quasi-independent Chechnya is cashing in on the new flow of oil across its territory to Black Sea ports. Moreover, the Chechen section of the line was damaged during the war with Russia. After threatening to build a pipeline around Chechnya (at a cost of at least \$250m), the Russian government agreed to repair the line (at a cost of \$1.2-2m).

On 23 May 1997 Russia and Chechnya signed a co-operation agreement whereby the Chechen side undertakes to service and safeguard the oil and gasoline pipelines crossing Chechnya. On 3 June Russia and Chechnya agreed a plan to finance the reconstruction of the Chechen republic. On 13 June a Russian-Chechen memorandum stipulated the conclusion of an agreement between the Russian Fuel and Energy Ministry and the state oil companies of Azerbaijan and Chechnya on the transit of Azerbaijan's oil. It includes the reconstruction of the 153km stretch of the Baku-Novorossiisk pipeline that crosses Chechnya. On 14 June a customs agreement was signed.

On 11 July 1997 Russia signed a five-point agreement with the heads of the Chechen and Azerbaijani state oil companies. Among its terms, Russia, Azerbaijan and Chechnya concluded a trilateral agreement on the transit of Caspian oil to the world markets via the Baku-Grozny-Novorossiisk pipeline. Azeri oil exports of 5mt are to be exported via Chechnya annually. Russia and Chechnya signed another agreement on 12 July whereby Russia undertakes to finance repairs to the pipeline in return for Chechen guarantees of the safety of Russian workers engaged in repair work.

On 9 September 1997 Russia and Chechnya signed five agreements that will enable Azerbaijan to export its 'early oil' via Chechnya, as planned. Chechnya will receive \$854,000 from the federal budget, and the Russian pipeline company Transneft will

pay Grozny \$0.43 for each tonne of oil exported. The deal did not exclude more negotiations to set new terms for the export of oil in 1998.

Troubles over the Chechen section of the pipeline continued. A lorry carrying Russian construction workers was blown up in Chechnya on 9 September 1997, injuring two passengers. Russia's Transneft reacted by temporarily stopping repair works on the pipeline. Also in September Chechnya started a crackdown on illegal oil operations to avoid oil thefts from the Baku-Novorossiisk pipeline. Russian-Chechen negotiations on the distribution of transit fees in 1998 were set to start in December 1997. The Baku-Novorossiisk pipeline pumped its first oil on 9 November 1997.

In August 1997 Russia renewed its threat to build an alternative pipeline to ensure passage to Novorossiisk for oil from Azerbaijan. A bypass pipeline would not just provide a way around problems in Chechnya but also allow for a higher volume of oil to be shipped out of the Caspian basin. The Chechen pipeline has an annual capacity of 13mt and will not be able to carry the amount of 20m-25mt of oil expected for the year 2000 by the Russian government. Accordingly, the two pipelines would operate side by side. On 15 September the Russian government announced that the decision has been made to construct a 283km (or 312km) oil pipeline bypassing Chechnya to export the Caspian oil from Azerbaijan. The pipeline will run from Khasavyurt in Dagestan to Terskaya in North Ossetia, and the costs are estimated at \$250m. The pipeline bypassing Chechnya should be completed in no more than 18 months.

But the new pipeline will run close to the Chechen border through an area of Dagestan populated by ethnic Chechens. Moreover, Dagestan's political stability came under threat in late 1997. Ethnic tensions, economic problems and crime rates are rising. Acts of terrorism have already taken place in the area where construction of the alternative pipeline is planned. Russia's ability to ensure the security of an oil pipeline in Dagestan in case of rising internal tensions is limited.

On ecological grounds, the mayor of Novorossiisk categorically opposed construction of an alternative pipeline. On 16 September an Azeri official noted that Baku does not object to Russia's decision to build an alternative pipeline. The route bypassing Chechnya is not the optimum one for Russia and technical problems will make the construction difficult. In addition, the decision to build a bypass pipeline contravenes the Russian-Chechen-Azeri agreement, signed in July 1997.

When Chechnya was offered high transit payments in mid-1997, neighbouring Russian republics began to demand a share in transit fees. The Republic of Ingushetia seeks payment for the transit of Caspian oil through the 18km stretch of the Baku-Grozny-Tikhoretsk pipeline that crosses Ingushetia. The largest pumping station is located in the republic. In reaction to this announcement, Dagestan declared that it, too, wants its share in transit fees for its 270km stretch of the pipeline.

A further problem connected with the Baku-Novorossiisk pipeline is the situation at the port of Novorossiisk. First, the port has a capacity of only 30mt/yr of oil. In order to handle the large influx of oil from Azerbaijan and Kazakhstan, once the pipeline from the Tengiz oil field is completed, a new loading facility is being built at Novorossiisk. In the year 2000 oil deliveries to Novorossiisk might already amount to



70mt, of which 30mt would come from the MDOP, 25mt from the CPC pipeline and 15mt from the Baku-Novorossiisk pipeline.

Second, Novorossiisk is frequently closed down by storms for days at a time. In some months, even moderate winds often force the oil port to suspend the loading and unloading of tankers for several days.

Third, oil shipments through the Novorossiisk oil incur additional costs. In early 1996 the port authorities at Novorossiisk imposed an 'ecological' tax surcharged on customs dues on the transshipment of export cargoes including crude oil. Officially the tax is intended to finance anticontamination measures in the oil port.

Fourth, scientists warned against Novorossiisk port expansion plans because of ecological dangers. But the international consortium which will build the new terminal at a cost of \$2bn has put considerable pressure on the Russian state administration responsible for the environment.

### ***Baku-Georgian Black Sea ports***

Soon after the Chechen war started in December 1994, another possible export option seemed attractive: the route to a Georgian Black Sea port. This pipeline would avoid Russian territory and thus all the disadvantages connected with Russia's involvement in Caspian oil transports:

- it would break the Russian monopoly on the transport of Caspian oil and thus weaken Russia's political pressure on the Caspian region and Russia's bargaining position in negotiations on transit fees;
- it would provide an export opportunity in case the Baku-Novorossiisk pipeline were closed as a result of another escalation in the Russian-Chechen conflict;
- it would offer additional transport capacities. Oil exports from the Caspian region are estimated to amount to up to 25mt in 2000 and up to 60mt in 2010 (see Table 7.5). The Baku-Novorossiisk pipeline has a current capacity of 5mt and the oil terminal at the port of Novorossiisk has a capacity of 30mt;
- it would carry only Caspian oil and would not mix this with lower quality Russian oil.

In October 1995 Azerbaijan and the AIOC decided to transport the early oil through the Baku-Novorossiisk pipeline and through a pipeline to be constructed from Baku to the Georgian Black Sea ports. The latter pipeline is two-thirds finished, and is scheduled to be commissioned late in 1998. An agreement with Georgia on the construction of a pipeline from Baku to the Black Sea was signed in March 1996. The 920km pipeline will cross 480km of Azeri territory and 440km of Georgian territory. It will reach the ports of Batumi, Poti and Supsa. The pipeline will have an annual capacity of 5.5mt on completion in 1998. The final capacity of the pipeline was set at 10mt/yr.

A new 39km pipeline between the Azeri border and the Georgian capital Tbilisi will be constructed. From Tbilisi the pipeline will hook up to the long-existing 340km pipeline to the Black Sea. But whereas in the Soviet period the pipeline ended at Batumi, the new terminal is the port of Supsa. This is because Batumi is in Adjara, a region of Georgia under the control of a warlord owing only nominal allegiance to the Tbilisi government. The contract includes the restoration of the existing stretch of the pipeline. The project is expected to be finished by the end of 1998. An Azeri-Turkish joint venture will rehabilitate the 47km stretch of the line in northern Azerbaijan by April 1998. The total reconstruction costs of the line are put at \$330m.

The transit tariff is to be set at \$3.16/t, with \$1.91 accruing to Azerbaijan and \$1.25 to Georgia. Unlike Russia, which is paying for its own pipeline renovation, Georgia has agreed to waive all but token transit fees for 30 years in return for outside construction financing.

The first early oil deliveries from the AIOC will be loaded on to tankers at the Georgian Black Sea port of Supsa, where a \$225m oil terminal is under construction. In addition the Japanese company Itochu will build a new oil processing plant at the port. The refinery should help Georgia to serve as a key link in the transport of Caspian oil to Europe.

#### ***From Black Sea ports to world markets***

The main problem with the pipeline from Baku to the Georgian Black Sea ports is, as already pointed out, that oil loaded on to tankers in Georgia has to pass through the Bosphorus. In 1994 Turkey adopted new regulations for the Turkish straits (Bosphorus and Dardanelles), which restrict the passage of oil tankers through the straits. In particular, the transport of oil from the Black Sea to the Mediterranean Sea has been limited. Hence, Caspian oil delivered to Black Sea ports in Russia or Georgia has to bypass the Bosphorus because of Turkish restrictions for oil tankers leaving the Black Sea. The following options are currently under discussion:

- shipment from the Georgian Black Sea ports to the Ukrainian port of Odessa and from there through the Odessa-Brody pipeline to the main oil export pipeline to central and western Europe. On 16 December 1996 a ferry line across the Black Sea between the Georgian port of Poti and the Ukrainian port at Illichivsk near Odessa was established. The first oil deliveries to Ukraine were made in May 1997;
- a Russian pipeline project to transport oil from Burgas on the Bulgarian Black Sea coast to the Greek port of Alexandroupolis. The 360km Burgas pipeline will have a capacity of 30mt/yr and will cost \$650m. In addition, Bulgaria wants to buy and re-export oil from Azerbaijan to Europe;
- initial oil shipments sent by pipeline from Baku to Novorossiisk could be shipped by tanker to Samsun, on Turkey's Black Sea coast. However, Moscow has indicated that it is not in favour of oil transitting through Turkey to the Mediterranean terminal of Ceyhan;



- *Jane's Intelligence Review* (September 1997) has suggested that Azerbaijan should investigate Romania as a possible transport route for its crude oil output. Oil could be shipped to Romania's port of Constanta. From Constanta the oil could be piped to various east European destinations or shipped to western Europe by barge via the Danube and Rhine rivers. It could also be processed at the Constanta refinery.

### ***Baku-Ceyhan***

Turkey favours the construction of a pipeline from Baku to the Turkish Mediterranean port of Ceyhan. The route from Baku to Ceyhan would be extremely long and costly by reason of crossing several major mountain ranges and an earthquake zone. The 1,650km pipeline would cost at least \$2bn and is expected to have an annual throughput capacity of 45mt.

Georgia has made common cause with Turkey and favoured a Baku-Ceyhan pipeline, which would still cross Georgian territory. The shorter route from Baku through Armenia to Ceyhan cannot be used because of the conflict between Azerbaijan and Armenia. The president of Azerbaijan has also indicated a strong preference for the Baku-Ceyhan option. But so far the AIOC has not announced its position. As early as 1996 the AIOC refused a Turkish offer for construction of the pipeline on the grounds that conditions were too severe. Neither Kazakhstan nor Turkmenistan, which could use the pipeline, expressed much enthusiasm for the route, being aware that it would lead through unstable regions in the Caucasus and Kurdish areas of Turkey. But in October 1997 Kazakhstan seems to have changed its position and might start to support the Baku-Ceyhan pipeline, since there are few alternatives for oil exports from Kazakhstan. The US favours the pipeline route through Turkey and is trying to win support from the political leaders of the Caspian region.

### **Possible export routes for oil from Kazakhstan**

Kazakhstan's oil pipeline network is run by the state concern Kazakhnefteprovod. The main western pipeline, Uzen-Atyrau-Samara, is 3,000km long and can transport 10m-11mt of oil a year. It connects Kazakhstan with the Russian oil export pipeline system and is at present the only export pipeline for oil from Kazakhstan.

Kazakhstan must apply each year to the Russia Fuel and Energy Ministry for quotas specifying the amount of oil that the Russian pipeline operator, Transneft, will move through the pipeline to Samara. In 1995 Kazakhstan was allocated an export quota of 3.5mt of crude oil. In addition, Kazakhstan was given permission to move out 2.5mt of oil to Russian and former Soviet Union refiners. In theory, export quotas are allocated for the use of all producers operating in Kazakhstan. But for the last few years, Tengizchevroil, the joint US-Kazakh venture, has won the lion's share of the allowance designated for the far abroad. Nevertheless, Tengizchevroil is permitted to send only half of its production to foreign markets.

In April 1996 Tengizchevroil reached an agreement that allows it to export significantly more oil and gas through the Russian pipeline network. By the end of 1996 Tengizchevroil was able to export more than 14,966t/d of oil at an average price

of \$147/t. Chevron made well over \$80m from the oil field in 1996, way up from \$1m in 1995.

Nevertheless, Tengizchev oil has been searching for additional export routes. In October 1996 the company agreed to swap 20,000 tonnes of oil with Azerbaijan's Socar. It was a one-off deal to test out the system. In July 1997 regular shipments started to Azerbaijan and from there to a Georgian Black Sea port. Tengizchevroil also delivered crude oil by pipeline to Lithuania, by rail to Finland and by barge up the Volga and down the Don to the Black Sea and the Mediterranean Sea. The US allowed swap deals between Azerbaijan, Kazakhstan, Turkmenistan and Iran. There will be no sanctions against the countries and the companies involved. But the export policy of Tengizchevroil is focused on the CPC pipeline.

### *The Caspian Pipeline Consortium (CPC)*

Since Kazakhstan's oil export may amount to 9mt in 2000 and 19mt in 2010 (see Table 7.5; Tengizchevroil expects considerable higher export figures) the existing export pipeline has not enough capacity even if Russia would allow for full use. In 1992 the Caspian Pipeline Consortium was founded to build a new pipeline for the export of oil from the Tengiz field. In the beginning the CPC had the form of a joint stock venture between the governments of Kazakhstan and Oman. Oman was involved in the project because it had offered Kazakhstan a \$100m loan.

The relations between the Oman Oil Company (a joint venture of the Omani government with an entrepreneur John Deuss) and Chevron were tense for a long time because of the conflict over a reasonable share for Chevron in the project and disputes over the exact pipeline routing. After three years of wrangling, the Omani government bought out Deuss and concluded an agreement with Russia and Kazakhstan and signed a final agreement in March 1996. Under the agreement the export pipeline was to run from Kazakhstan's Tengiz oil field to the Russian Black Sea port of Novorossiisk. The new agreement gave Russia 24% ownership, Kazakhstan 19%, Oman 7%, with the remaining 50% divided among the oil firms Chevron 15%, Lukarco joint venture 12.5%, Rosneft-Shell joint venture 7.5%, Mobil Corporation 7.5%, British Gas and Agip 2% each, Oryx Energy Corporation and Kazakhstan's state oil company 1.75% each. Kazakhstan's \$150m stake in the CPC was financed by Amoco as part of a deal permitting the company to transport 3mt of oil via the planned CPC pipeline.

President Yeltsin decreed that the CPC would be exempted from the normal obligation to sell part of its profits in foreign currencies in the domestic market until 2013. The money saved by this is to be spent servicing the consortium's production and financial activities.

The 1,500km CPC pipeline is expected to cost about \$4bn and to be completed in 2000. The CPC project involves the use of existing pipelines, which need refurbishment. Only 50% of the pipeline, 750km from Komsomolsk to Novorossiisk (via Tikhoretsk, avoiding Chechnya), has to be newly constructed. The initial capacity is scheduled to be 25mt/yr (or 28mt/yr); of that, 20mt will come from Kazakhstan. By 2014 the pipeline's annual capacity may be expanded to 67mt, with 50mt available for oil from Kazakhstan. The ultimate annual capacity is set at 75mt.



The US firm Fluor Daniel and Russia's Giprovestokneft have signed a \$50m contract with the CPC to design and manage construction of the new pipeline. The CPC has also invited tenders for contracts worth a total of \$1.3bn for construction in Russia, \$700m to build a terminal in Novorossiisk and \$160m to build and modernise infrastructure in Kazakhstan.

The construction of the CPC pipeline may fall behind schedule, because talks on tariffs with three Russian regions through which the pipeline will pass are complicated. The regional officials of the Russian republic of Kalmykia and of the Astrakhan, Stavropol and Krasnodar territories have also insisted that the CPC must finance the creation of social infrastructure along the route of the pipeline.

To lessen its dependence on Russia and to acquire further oil export capacities Kazakhstan is looking for alternative routes. Kazakhstan has declared that it does not intend to export oil produced at its newly explored fields through the CPC pipeline.

### *Exports via Azerbaijan*

In October 1996 Tengizchevroil agreed to swap 20,000 tonnes of oil with Azerbaijan's Socar. It was a one-off deal to test out the system. In March and May 1997 Tengiz oil was shipped from the Kazakh port of Aktau (formerly Shevchenko) through the Caspian Sea to Baku and from there by rail to the Georgian Black Sea port of Batumi, where it was loaded on tankers. In July 1997 the first regular shipments of crude oil extracted from the Tengiz field arrived at oil terminals in Batumi.

Socar has reached an agreement with Tengizchevroil to build a 46km bypass pipeline from Dashkil to Ali-Bayramli. The pipeline, which Tengizchevroil will finance at an estimated cost of \$5-6m, will run parallel to an existing pipeline to transport oil from Kazakhstan's Tengiz field to Ali-Bayramli, whence it is shipped by rail to Batumi. In October 1997 Georgia, Chevron and Caspian Transco signed a protocol to rebuild the 300km Georgian pipeline to Batumi. The pipeline will be used to transport up to 8mt of Tengiz oil a year.

A long-term solution for Chevron and Kazakhstan may lie in a subsea pipeline under the Caspian Sea to Azerbaijan. A pipeline under the Caspian Sea is a significantly less challenging proposition than similar pipelines in the North Sea. The pipeline could be hooked up to the main export line that will carry oil from Azerbaijan's Azeri, Chirag and Guneshli Caspian fields. Tengizchevroil is prepared to invest in Azerbaijan to increase its oil exports. Kazakhstan and Turkey discussed the construction of a pipeline from the Tengiz oil field along the bed of the Caspian Sea and through the Transcaucasus to Turkey. Concrete moves towards implementing the project might begin by February 1998.

### *Swap deal with Iran*

In 1996 Kazakhstan and Iran signed a swap deal under which Kazakhstan will ship crude oil from its western fields to Aktau and then across the Caspian Sea to Iran's northern refineries in return for deliveries of the same amount of Iranian oil to the Gulf for export. From December 1996 to May 1997 the swap deal amounted to

70,000 tonnes of Kazakh oil. In 1997 Kazakhstan is likely to export more than 1mt of oil to Iran. Shipments are set to amount to at least 6mt over the next five to six years.

Kazakhstan is charged about \$14/t for the service, but receives almost identical volumes of crude oil at Kharg Island, where Italian companies deliver occasional cargoes of Iranian light oil. In the beginning there were difficulties, because Iran was unable to refine Kazakh crude oil because of its content of mercaptans, an impurity. The two countries reached an agreement whereby Kazakhstan would cut the share of Tengiz oil, which contains mercaptans, from 50% to 20%, and increase the share of purer crude from Buzachi. Nevertheless, Kazakhstan had to suspend deliveries again in October 1997 because Iranian refineries proved unable to process Kazakh oil.

Moreover, the US has warned Chevron and Mobil against exporting any Tengiz oil through Iran. The US sanctions on the oil industry of Iran are, therefore, likely to limit Iran's role as a transit country for Kazakh oil exports.

### *Exports to China*

In October 1997 Kazakhstan started to send oil to China. The first oil was exported by rail but a pipeline is planned. The construction of this pipeline will be a long, difficult, and expensive undertaking. The Chinese National Petroleum Company (CNPC) plans to build a 3,000km pipeline from the western Kazakhstan Uzen and Aktyubinsk oil fields to China's western border. The pipeline is envisaged to start operating by 2002.

The pipeline is part of an ambitious project, a 6,720km Turkmenistan-China pipeline via Uzbekistan and Kazakhstan, proposed by Exxon, Mitsubishi and the CNPC. It would be the longest pipeline in the world and construction costs are estimated to amount to \$8-12bn. Nevertheless, China might be interested in the pipeline to improve its strategic political influence in central Asia and to diversify supply sources. China's domestic fuel consumption is expected to rise considerably in the first half of the 21st century. Japan is interested in this pipeline as a result of its concern over future Chinese coal burning, causing severe air pollution in Japan.

### **Future prospects for Caspian oil exports**

#### *Azerbaijan*

In the year 2000 Azerbaijan is expected to produce between 5mt and 15mt of oil for export. By then the expanded Baku-Novorossiisk pipeline should have an annual capacity of 15mt, enough to transport all oil exports from Azerbaijan. In addition the pipeline from Baku to the Georgian Black Sea ports will have a capacity of 5mt in 2000. The pipeline to the Georgian Black Sea coast will offer Azerbaijan an alternative if Russia demands higher transit fees or if the pipeline through Chechnya is closed because of the Russian-Chechen conflict.

By 2010 the export pipelines constructed by 2000 will be inadequate for Azerbaijan's oil exports, estimated by then to be between 20mt and 40mt. The Baku-Novorossiisk pipeline as constructed by 1999 will have an annual capacity of 15mt. The projected



capacity of the pipeline from Baku to the Georgian Black Sea ports is 10mt. That means that if Azerbaijan is to reach the higher estimate for its oil exports in 2010, it will need an additional annual export pipeline capacity of 15mt. Accordingly, the so-called main export pipeline (MEP) has to be constructed before the year 2010, if the country is not to risk a restriction of oil exports as a result of limited export capacity. It seems likely that the AIOC will wait for its first experience with the pipelines to Novorossiisk and to the Georgian Black Sea ports before it makes a decision either to expand one of these pipelines or to construct a new pipeline to Ceyhan.

Accordingly, for the AIOC the pipeline from Baku to the Georgian Black Sea ports will be the only operating alternative route to the pipeline through Russia until at least 2005. Hence, if the AIOC wants to ensure an equal bargaining position with Russia and avoid the risk that troubles in Chechnya will jeopardise oil exports from Azerbaijan, the AIOC will have to keep the pipeline to the Georgian Black Sea ports operating, even if it is considerably more expensive than the Baku-Novorossiisk pipeline. Turkey is further likely to limit the Bosphorus for oil shipments from Georgia both to avoid catastrophes and to promote the construction of a pipeline through Turkey for oil exports from Azerbaijan. To make the pipeline to the Georgian Black Sea ports a feasible alternative, it will therefore be necessary to find a Black Sea port able to handle oil deliveries from Georgia.

So far, there are four possibilities, all of which require further investment. Moreover, the Burgas pipeline being constructed in Bulgaria is promoted by Russia and will be used for Russian oil deliveries from Novorossiisk. It is unlikely that any free capacity will be left for Georgian deliveries. The shipment of oil from Georgia to the Turkish Black Sea port of Samsun would depend on the construction of a pipeline from Samsun to the Mediterranean port of Ceyhan. Since Turkey is at the same time planning to construct a pipeline for the delivery of Middle Eastern oil from Ceyhan to Samsun and lacks the necessary funds for the project, the realisation of the Samsun-Ceyhan pipeline is not likely. Moreover, the pipeline would diminish the pressure to construct the Baku-Ceyhan pipeline and would not serve Turkish interests. The possibility of oil shipments from Georgia to Romania has so far not been subject to closer examination. Accordingly, the route Baku-Poti-Odessa-Brody is currently favoured, although this route, too, has major disadvantages. First, Ukraine lacks the funds for construction of the Odessa oil terminal and the Odessa-Brody pipeline. Second, the AIOC would prefer to sell the oil to south-east European customers, most of whom are not connected to the Ukrainian pipeline system. Nevertheless, western oil companies engaged in exploiting Caspian oil have already agreed to finance repairs to the stretch of the Druzhba pipeline that crosses Ukraine, and a ferry line delivering small amounts of oil from Georgia to Ukraine started operation in 1997.

If the Baku-Novorossiisk pipeline is chosen as the main export pipeline for oil from Azerbaijan, the alternative route to the Georgian Black Sea ports (and further to Ukraine) will probably be kept operating to act as a counterweight to Russian pressure and avoid a Russian monopoly on oil exports from Azerbaijan. If the AIOC decides in favour of a new pipeline from Baku to Ceyhan, the route to the Georgian Black Sea ports would lose its function and would probably be closed as a result of high transport costs, which are estimated to amount to a total of \$33-37/t of Kazakh oil and \$25-29/t of Azeri oil. The route through Ukraine would also lose its relevance if Turkey lifted its restriction on oil shipments through the Bosphorus. The definite end



of US sanctions against Iran would lead to a complete change in the situation, since a pipeline to Iran would have a good chance of being chosen as the main export pipeline for oil from Azerbaijan.

### ***Kazakhstan***

If the CPC pipeline is finished as planned in 2000, Kazakhstan, too, will experience no restrictions on oil exports by that time. The export potential for that year, estimated at not more than 9mt, can without problems be transported through the new pipeline, which is planned to have a capacity of 25mt in 2000. Moreover, Kazakhstan will be able to export some oil to Iran under a swap deal valid until 2006. Only if the CPC pipeline is not in operation by 2000 will Kazakhstan have problems in exporting its oil. This might happen because of delays in construction of the pipeline or of the additional oil terminal at Novorossiisk, or because Russia (or individual regions of the Russian Federation) demands higher transit fees or closes the pipeline to exercise political pressure. In that case Kazakhstan would depend on the export route via Azerbaijan. But since the pipelines from Baku are used by oil producers from Azerbaijan, Kazakhstan, as a competitor in world oil markets, could only expect limited access to these pipelines. To improve access Tengizchevroil has started to provide finance for the construction of oil export pipelines from Azerbaijan to world markets and should be able to export at least 8mt of oil to the Georgian Black Sea ports after the relevant pipelines have been completed.

By 2010 Kazakh oil exports may rise to nearly 20mt and Tengizchevroil even hopes for 35mt. Nevertheless, the full operation of the CPC pipeline would guarantee unrestricted oil exports, since the capacity of the pipeline is planned to be expanded to 67mt in 2014. However, two problems might hamper Kazakh oil exports. First, the capacity of the Novorossiisk oil terminals might be too small to handle all oil deliveries from Azerbaijan and Kazakhstan. Second, the risks connected with the dependence on a single pipeline through Russia will remain. The export route via Azerbaijan might, therefore, be used for Kazakh oil deliveries, especially if the construction of the main export pipeline from Azerbaijan leaves unused capacity. In this case, Kazakh oil might even replace Azeri oil on the route through Ukraine. Oil deliveries to Iran could, perhaps, offer a further alternative to the CPC pipeline, since US sanctions against Iran might be lifted by 2010. Another alternative route for Kazakh oil exports which might be able to function by 2010 is the pipeline to China.

### **OIL FROM THE GULF**

As early as January 1992 Ukraine and Iran concluded an agreement that provided for annual deliveries of 4mt of oil to Ukraine with payment taking the form of industrial goods. There were also plans to build an oil pipeline with an annual capacity of up to 70mt. But the plans did not come to fruition (see Chapter 6).

Hopes for Iranian oil deliveries to Ukraine rose again in 1996 with plans to construct a pipeline through Turkey from the Mediterranean oil terminal near Ceyhan to the Black Sea port of Samsun. The pipeline is envisaged to have a capacity of 79mt/yr. An oil terminal with a capacity of 100mt is planned to be constructed at Samsun.



From Samsun the oil could then be shipped to the Ukrainian port of Odessa and there are plans to transport some of the oil further to central and west European markets after the pipeline connecting Odessa with the Ukrainian Druzhba pipeline has been finished.

An agreement between Turkey and Ukraine on the construction of the 600km Ceyhan-Samsun pipeline was signed in June 1997. The construction of the pipeline, along with an oil terminal at Samsun, will cost \$1.5bn. The Ukrainian state corporation Ukrzarubezhneftegazstroï (in Ukrainian: Ukrzakordonnaftogazbud) and the Turkish oil corporation Botas will participate in the project and form a joint venture, in which the Ukrainian side is expected to hold more than 50% of the shares.

Two main problems cast serious doubt on the project. First, neither Ukraine nor Turkey seems able to finance the project. Second, Turkey demands a guaranteed minimum annual throughput of 25mt. This demand can only be met with additional deliveries from Iraq. Moreover, Iraq is the sole owner of the right to ship oil through the port of Ceyhan and the pipeline connecting Iraq with Ceyhan. Accordingly, there have been negotiations with Iraq about supplies of oil to Ukraine. Kiev aspires to import 2mt of oil to be paid for by food supplies to Iraq. But the UN sanctions will, at least in the near future, not allow Iraq to export larger amounts of oil and it will be difficult to find suppliers for the desired annual throughput of 25mt.

## **GAS FROM SIBERIA**

At present 95% of Russia's gas exports to Europe go through the Ukrainian pipeline network which has an annual transit capacity of about 140bn cu metres. Of this, 120bn cu metres can be transported to central and western Europe and 20bn cu metres to south-eastern Europe and Turkey. Three projects are set to increase the pipeline capacity for Russian gas deliveries to Europe and Turkey.

The 5,100km Yamal-Europe pipeline will connect Siberian gas fields with central and west European customers. The pipeline will run from the Yamal field through Russia, Belarus and Poland to Germany. The project is led by Russia's gas monopolist Gazprom in co-operation with the German company Wintershall, the Polish Gas NiG company and the Belarussian Beltransgaz. The first section of the pipeline should be completed in 1999. In 2010 the pipeline should be able to carry 65bn cu metres of gas a year.

Russia also plans to expand the gas pipeline through Ukraine to south-eastern Europe and Turkey. Its annual capacity would be increased from 20bn to 40bn cu metres. In April 1997 Russia and Turkey signed a 25-year contract worth \$13.5bn, whereby Turkey will increase its annual purchases of Russian natural gas from 6bn to 30bn cu metres in 2010. Russia and Turkey also agreed to create a joint venture, which will repair and upgrade the existing pipeline that supplies Russian gas to Turkey via Ukraine, Romania and Bulgaria. Turkey will pay \$1.5bn towards the construction of new stretches of pipeline and compressor stations. The pipeline has a throughput capacity of 7bn cu metres/yr, which would be increased to 14bn cu metres/yr.

The Russian-Bulgarian joint stock company, Topenergo, will build a pipeline which will send an additional 12bn cu metres of Russian gas annually to Turkey via Bulgaria. The pipeline will run for 270km from the Romanian border to the Turkish border. It will be built along a route parallel to the existing Russian-Turkish pipeline. The new pipeline could be completed in 1999. But in October 1997 plans were delayed by a political crisis between Bulgaria and Russia. Bulgaria accused Russia of charging excessive prices for gas deliveries and of using its gas monopoly to exercise political pressure. At the centre of the dispute is a battle for control over the pipelines that carry Russian natural gas across Bulgaria to Macedonia, Serbia, Turkey and Greece. Topenergo should be given control over Bulgaria's gas pipeline network for nearly 50 years. Gazprom owns 50% of Topenergo and has the allegiance of the largest Bulgarian partner, the private conglomerate Multigroup. Gazprom also wants a Multigroup owned distributor, Overgas, to be an intermediary for most of Russian gas deliveries in Bulgaria. The Bulgarian government controls only 20% of Topenergo through the state owned Bulgargaz. In November 1998 it was decided to exclude the controversial Multigroup from the Russian-Bulgarian pipeline project. But this was not enough to solve the conflict.

According to a framework agreement signed in August 1997 a further Russian-Turkish joint venture will build a new pipeline from Izobilnaya, 100km east of Krasnodar, via Dzhugba and then under the Black Sea to Samsun on Turkey's Black Sea coast. The cost of the underwater pipeline is estimated at \$3.3bn and the construction involves a lot of difficulties. The envisaged pipeline would have an annual capacity of 3bn cu metres by 2000 and 16bn cu metres by 2010. But it seemed that an alternative pipeline running through Armenia had a better chance of realisation. The relevant agreement between Russia, Armenia and the Itera International Gas Transportation Company (US) was ratified by Armenia in October 1997. This pipeline would have an initial capacity of 3bn cu metres in 1999 and is planned to reach its final capacity of 9bn cu metres by 2003. However, on 3 November 1997 Gazprom announced that the route through Armenia had been rejected because of 'instability and high political risk' in the North Caucasus.

If all projects are finished according to plan, Russia will have the capability to export about 190bn cu metres of gas to central and western Europe in 2010 (about 120bn cu metres through Ukraine and 65bn cu metres through the Yamal pipeline). Moreover, it would be able to deliver 40bn cu metres of gas to south-eastern Europe and Turkey through the southern Ukrainian gas pipeline. A further 12bn-16bn cu metres of gas would be transported from Russia to Turkey through the underwater pipeline across the Black Sea or the pipeline through Armenia.

The Russian supply of 30bn cu metres would cover around half of Turkey's total gas needs in 2010. But the position of Russian gas in the markets of Turkey and south-eastern Europe might be challenged by deliveries from central Asia.



## GAS FROM CENTRAL ASIA

### Export potential

In the Ukrainian context the only relevant gas exporter in central Asia and the Caspian region is Turkmenistan (see Table 7.8). Together with gas deposits in Siberia, those in Turkmenistan had high priority with Soviet planners. All gas exports from Turkmenistan were transported through Kazakhstan to Russia where they joined the main gas pipelines to central Europe. After the break-up of the Soviet Union the Turkmen gas sector declined rapidly, mainly because Russia blocked gas exports to countries outside the former Soviet Union. Turkmenistan could make deliveries only to former Soviet republics, especially Ukraine, which had inadequate means of payment (see Chapter 6). As a result Turkmen gas exports declined from 72bn cu metres in 1990 to a mere 20bn cu metres in 1995. To break the Russian monopoly on the transit of Turkmen gas and to increase gas exports Turkmenistan developed plans for the construction of alternative gas export pipelines.

**Table 7.8: Net gas exports from central Asia, 1990-2010**

	bn cu metres		
	1990	2000	2010
Kazakhstan	- 6	0-1	2-8
Turkmenistan	72	45-65	80-110
Uzbekistan	3	4-5	6-7
<b>Total</b>	<b>69</b>	<b>49-71</b>	<b>88-125</b>

Source: *Energiya* (Russian Academy of Sciences), 12/1996

### Possible export routes for gas from Turkmenistan

#### *Turkmenistan-Iran-Turkey pipeline*

Iran offers the shortest and cheapest route for Turkmen gas exports to European markets. But the proposal for a pipeline from Turkmenistan to Turkey via Iran was long hampered by the US sanctions against Iran. Washington's decision in July 1997 not to oppose western involvement in the Iranian pipeline project fundamentally changed the geopolitical situation in Eurasia. The US declared that it would not oppose Turkmenistan's efforts to send gas via Iran, because the gas pipeline would benefit Turkmenistan and Turkey more than Iran.

The 140km pipeline connecting the Turkmen Korpedzhe field with the Iranian gas pipeline network at Kurtkui was completed in late 1997. It will have an initial annual capacity of 4bn cu metres, set to rise eventually to 12bn cu metres. Iran is funding

90% of the total cost of \$190m, to be repaid by Turkmenistan through gas deliveries. The Korpedzhe-Kortkui pipeline will tie in to the proposed Turkmenistan Transcontinental Pipeline. The 200km Korpedzhe-Kortkui pipeline was opened on 29 December 1997.

In August 1996 Iran and Turkey signed a deal which foresees annual gas exports of 10bn cu metres to Turkey until 2018. In May 1997 Turkmenistan, Turkey and Iran signed a memorandum on building a 2,177km pipeline with an annual capacity of 30bn cu metres from Turkmenistan to Turkey. Costs for the pipeline were projected at \$3.1bn. Turkmenistan and Iran planned to extend the pipeline onwards to Europe at a cost of \$1.1bn. The pipeline from Turkmenistan to south-eastern Europe would be 3,220km long and would carry 8bn-32bn cu metres/yr. But construction could not be finished before 2005.

#### ***Turkmenistan-Pakistan pipeline***

A joint venture between Unocal (US) and Delta Nimir (Saudi Arabia) has proposed building a gas pipeline with an annual capacity of 20bn cu metres from Dauletabad in Turkmenistan through Afghanistan to Multan, on Pakistan's existing gas grid. Of the total length, 140km of the pipeline would lie in Turkmenistan, 760km in Afghanistan and 400km in Pakistan. A 600km extension into India would be possible. The pipeline is expected to cost \$3bn. In July 1997 Pakistan and Turkmenistan signed an agreement on the project with Unocal and its strategic partner Delta Nimir. In October a consortium was formed for the construction of the pipeline. In this consortium Unocal holds 46.5%, Delta Nimir 15%, Russia's Gazprom 10% and Turkmenistan 10%. The remaining 18.5% is shared between several companies from South Korea, Japan, Pakistan and Indonesia.

Construction of the pipeline is envisaged to begin in December 1998 and to be completed by 2001. But because of the ongoing war in Afghanistan the future of the project remains uncertain. In addition, some industry observers have described the estimated size of the market in Pakistan, and perhaps in India, as overoptimistic.

#### **Future prospects for central Asian gas exports**

After completion of the Turkmenistan-Iran-Turkey pipeline, Turkmenistan will deliver at least 10bn cu metres of gas to Turkey and a further 20bn cu metres to south-east European customers. Although these deliveries will be used by Turkey, and perhaps by south-east European countries as well, to reduce dependence on Russian gas deliveries, the amounts are too small to force a reduction in Russian gas deliveries to the region. As long as Turkmenistan has no access to the Asian market, the country will be forced to sell its remaining gas exports to customers in the former Soviet Union. If Russia should continue to restrict access to its gas pipeline network, the development of the central Asian gas sector might be hampered considerably.



## UKRAINE'S FUTURE ROLE IN THE EURASIAN PIPELINE NETWORK

### Oil transit

There are four existing and potential routes for oil transits through Ukraine:

- from Russia and Kazakhstan via the Russian town of Samara and then through the Ukrainian MDOP pipeline to the Black Sea ports at Novorossiisk and Odessa;
- from Russia through the southern branch of the Druzhba pipeline to south-central Europe;
- from the Caspian Sea via the Georgian Black Sea ports, the Odessa-Brody (-Poland) pipeline and then the Druzhba pipeline to central and western Europe;
- from the Middle East (Iran, Iraq) through Turkey and the Black Sea to Odessa and from there through the Odessa-Brody(-Poland) pipeline further to central and western Europe.

The future of the MDOP depends on the amounts of Caspian oil which will be delivered to the Russian Black Sea port of Novorossiisk. If the Baku-Novorossiisk pipeline and the CPC pipeline deliver oil to Novorossiisk from 1998-2000 on, oil terminals in Novorossiisk will work at full capacity and further Russian and Kazakh oil delivered through the already existing pipeline via Samara and the MDOP will have to be transported to Odessa. Accordingly, the MDOP pipeline to Odessa and the Ukrainian transshipment company Eximnefteprodukt would work at full capacity (14mt/yr). At the same time the oil terminals at Novorossiisk might prove unable to handle all incoming oil. In that case deliveries through the MDOP pipeline to Novorossiisk would have to be reduced. Deliveries through the other two pipelines to Novorossiisk have a higher priority since their transshipment is subject to international treaties.

As long as neither the Baku-Novorossiisk nor the CPC pipeline delivers oil to Novorossiisk the situation will be exactly the other way round. The oil terminals at Novorossiisk will have idle capacity and Russian oil deliveries to Odessa will be reduced (at least until Russian oil production increases considerably). At the same time the MDOP to Novorossiisk would work at full capacity (30mt/yr) to supply additional oil to the Russian Black Sea port. However, if it seems that either the Baku-Novorossiisk or the CPC pipeline will not be completed at all, Russia may decide to realise plans for the construction of an alternative pipeline to the MDOP which would avoid Ukrainian territory.

The Ukrainian section of the Druzhba pipeline will continue to transit Russian oil to south-central Europe into the next century. However, the transit pipeline will have spare capacity of about 8mt/yr as long as no additional sources of supply are found. Additional supplies could come either from the Georgian Black Sea ports in the form of oil from Azerbaijan and Kazakhstan or from the Turkish Black Sea port of Samsun in the form of oil from the Middle East.

The realisation of the Ceyhan-Samsun pipeline is unlikely because of the lack of finance and the lack of oil supplies. Accordingly, the future capacity utilisation of the Druzhba pipeline depends on the decision regarding the destination to which oil from Georgia will be delivered. If all oil from the Georgian Black Sea ports were shipped to Odessa, Ukraine would receive 5mt/yr from 1998 on. Hence, Ukraine would have to finish the first stage of the oil terminal in Odessa, with a capacity of 12mt, and the Odessa-Brody pipeline in 1998. But there would be no need to expand the Odessa oil terminal or to construct an extension from Brody to Poland in the near future.

The further extension of Ukraine's transit pipeline network would only be sensible if:

- the AIOC decided against the Baku-Ceyhan pipeline and Russia proved unable to handle the transport of all domestic and Caspian oil exports. In that case Ukraine could expect annual deliveries of up to 18mt of oil from the Georgian Black Sea ports to Odessa (10mt from Azerbaijan and 8mt from Kazakhstan);
- the Ceyhan-Samsun project were realised. In that case at least 25mt of oil from the Middle East would be delivered to Odessa every year.

In either case Ukraine would have to increase the capacity of the Odessa oil terminal. However, it might decide to use the additional oil supplies for domestic consumption instead of exporting them through the Druzhba pipeline. This solution would avoid the construction of a pipeline from Brody to the northern branch of the Druzhba pipeline in Poland and it would end Ukraine's dependence on Russian oil supplies. Oil delivered to Odessa could be processed at four Ukrainian refineries which had spare capacity of about 40mt in 1996.

In conclusion, the overall relevance of Ukraine to Russian oil exports is unlikely to decrease, though the capacity utilisation rate of Ukraine's various oil transit pipelines may change in the next decade. Through the port of Odessa and the Druzhba pipeline, Ukraine will continue to export 25m-30mt of Russian oil. In addition Ukraine will transport between 10m and 30mt of Russian oil through the MDOP to Novorossiisk, at least in the near future. In addition, there is a good chance that Ukraine will annually transit 5m-8mt of Azeri oil through the Odessa-Brody pipeline from 1999. Hence, oil transits through Ukraine should amount to between 40mt and 68mt/yr in the first decade of the 21st century. Ukraine's annual income from oil transits would amount to \$200m-300m (in 1997 prices). The situation would seem even more favourable to Ukraine if plans for the transit of Kazakh or Middle Eastern oil through Ukraine materialised.

### **Gas transit**

There are two routes for gas transits through Ukraine:

- from Russia through Ukraine to central and western Europe;
- from Russia through southern Ukraine to south-eastern Europe and Turkey.



The relevance of Ukraine's gas transit pipelines to central and western Europe will decrease when the Yamal pipeline starts operation in 1999/2000. Nevertheless, the final capacity of the Yamal pipeline, to be reached in 2010, is planned to amount to less than 70bn cu metres of gas. Already in 1996 Russia's gas monopolist, Gazprom, exported nearly 120bn cu metres of gas to central and western Europe and it plans to increase exports considerably. Hence, Ukraine is likely to transit 70bn-100bn cu metres of Russian gas to central and western Europe every year in the first two decades of the 21st century. Accordingly, the construction of the Yamal pipeline will not really replace the transit pipelines through Ukraine, but is mainly intended to make the desired increase in Russian gas exports possible. Russia's aggressive rhetoric towards Ukraine can, therefore, be understood as a means to get lower tariffs, but not as a real threat to stop gas transits through Ukraine. Accordingly, Gazprom has recently done everything possible to improve conditions for gas transits through Ukraine. Gas metering stations have been installed and possible losses were insured with Lloyd's of London.

In addition Gazprom plans to increase gas transits through Ukraine to south-eastern Europe and Turkey from 20bn to 40bn cu metres. Russian gas deliveries to Turkey are backed up by a long-term contract and there are no competitors in sight who would be able to drive Russian gas out of south-east European markets.

Hence total Russian gas transits through Ukraine are unlikely to decrease considerably in the next two decades. Since Gazprom can pay transit fees to Ukraine by delivering additional gas for Ukraine's domestic use in a barter deal, gas transits through Ukraine do not strip Gazprom of urgently needed cash. Ukraine's Ukrgazprom, on the other hand, receives urgently needed gas deliveries without having to pay in hard currency. This scheme benefits both parties and is likely also to be applied in the future.

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## CHAPTER 8: ELECTRICITY

### PRODUCTION AND CONSUMPTION

#### Electric power stations

The first electric power station in Ukraine was built in Kiev in 1890. Until 1913 a number of power stations were constructed with equipment being provided by German and British manufacturers. In 1913 Ukraine's power stations had a capacity of 304,000kW. Under Soviet rule Ukraine's electric power industry expanded rapidly, especially in the 1930s. Five thermoelectric stations were built and were transferred to using crushed coal instead of quality coal which they had been burning wastefully until 1926. Also in the 1930s the Dnieper Hydroelectric Station, at that time the largest in Europe, was constructed. As a result of these efforts the capacity of Ukraine's power plants rose from 474,000kW in 1928 to more than 2.5m kW in 1940.

Ukraine's electric power industry experienced its next period of rapid growth between 1950 and 1975, when the use of electrically driven machinery in industry greatly increased. To satisfy the rising demand, 10 large thermoelectric stations and the Dnieper cascade of hydroelectric stations were built. As a result the capacity of Ukraine's power plants rose from about 0.5MW in 1950 to more than 38MW in 1975.

In the same period the efficiency of Ukraine's power stations was increased considerably. Equipment and machinery were extensively modernised. Huge high-output energy blocs (steam-turbine-driven generators) with a capacity of up to 800,000kW were introduced. The new energy blocs led to a reduction in fuel consumption from 590g/kWh in 1950 to 345g/kWh in 1980. Through automation the number of servicing personnel at Ukraine's power stations was reduced from 7.6 persons/1,000kW in 1950 to 1.2 persons/1,000kW in 1980.

A further increase in the capacity of Ukraine's power plants was achieved with the introduction of nuclear power plants. The first was built in Chernobyl in 1977, and in the 1980s a total of five nuclear power plants were operating in Ukraine. They were responsible for an increase in the total capacity of Ukraine's power stations from 38MW in 1975 to about 55MW in 1990.

In 1992 Ukraine started the development of wind-powered electric stations. The project, led by the joint venture Windenergo, formed in turn by a number of Ukrainian companies together with the American Keretch/Windpower, organises the construction of wind-powered turbines with a capacity of 110kW each. Some wind-powered installations were put into operation on an experimental basis from 1993. Electricity production on a commercial basis started in summer 1997 in the Crimea and in western Ukraine. However, wind-powered stations will not have a total

capacity of more than 100MW (0.002% of Ukraine's total capacity) before the year 2000.

### *Environmental concerns*

In the late 1970s there was increasing awareness of the environmental damage caused by thermal power stations. The coal-fired power plants at that time produced 1.5mt of smoke and slag every year. Thermoelectric power stations account for a considerable share of air pollution in Ukraine (see Table 8.1). The Soviet authorities became aware of the need to provide the power stations with smokestacks up to 350 metres high, with coagulators and electrofilters. The damming of the river Dnieper for hydroelectric power stations and the emission of warmed water by the nuclear power stations put a heavy strain on the river's ecological system, leading to the spread of blue-green algae and to the death of fish.

<b>Table 8.1:</b>			
<b>Fuel use and air pollution by thermoelectric power stations, 1980-1995</b>			
	<b>1980</b>	<b>1990</b>	<b>1995</b>
Electricity production (bn kWh)	190	202	116
<b>Fuel used</b>			
Coal (mt)	55.7	40.8	39.8
Mazut (mt)	18.9	9.7	2.4
Natural gas (bn cu metres)	12.8	33.8	14.9
<b>Air pollution ('000 tonnes)</b>			
Ash	1,094	580	517
SO <sub>x</sub>	2,674	1,683	1,137
NO <sub>x</sub>	425	413	236
CO <sub>x</sub>	—	15	47
Source: <i>Energetika i elektrifikaziya</i> , 3/1996			

The security risks caused by the Soviet-style nuclear power plants were dramatically highlighted with the accident at Chernobyl on 26 April 1986. A reactor of the nuclear plant, located about 130km north of Kiev, exploded and the resulting cloud of radiation covered the surrounding area and later extended to parts of Belarus, Poland and Scandinavia. To extinguish the burning reactor Soviet engineers encased it in a concrete sarcophagus.

The environmental damage caused by Ukraine's electric power stations and especially its nuclear power plants has been immense. The Soviet and later the Ukrainian authorities had to spend and are still spending considerable resources to deal with the consequences of the Chernobyl disaster. But this has not provoked a rethinking of Ukraine's energy policy. The environmental damage has so far been treated as a sad but unavoidable consequence of the country's energy policy and it does not seem to influence decisions of Ukrainian policymakers on the future of the country's power stations.



### *Present crisis*

The main concern of the relevant decision makers in Ukraine is the lack of funds for the modernisation of old power stations and the construction of new ones. About 80% of the blocs of Ukraine's thermoelectric power stations need to be modernised or replaced. In 1996 Ukraine's thermoelectric power stations consumed on average 365g/kWh of fuel. This means that fuel consumption is now less efficient than in 1980 when it stood at 345g/kWh. The outdated technology employed in the nuclear power plants leads to the escape of radioactivity and to temporary closures of blocs. The hydroelectric power stations, too, have to be modernised if they are not to break down in the near future. As a consequence of the poor state of many power stations the official capacity of Ukraine's electricity producers is never actually reached since some blocs cannot work at capacity and sometimes do not even work at all. The result is a permanent decline in electricity production (see Tables 8.2 and 8.3).

**Table 8.2: Capacity of Ukraine's electric power stations, 1997**

	MW
Official domestic capacity	55,000
Of which: thermoelectric power plants	35,000
nuclear power plants	14,000
hydroelectric power plants	3,000
Real domestic capacity <sup>1</sup>	33,000
<sup>1</sup> According to the Institute for Problems of Energy Saving (Ukrainian National Academy of Sciences, Kiev).	
Source: Ukrainian Ministry for Energy and Electrification	

The Ukrainian government sees the increased use of nuclear energy as the easiest way out of the present crisis. Nuclear power plants depend neither on gas imports from Russia nor on the purchase of expensive coal from domestic mines. Hence, for Ukraine nuclear energy is a cheap energy source which also helps to increase independence of Russian energy supplies. Ukraine, therefore, hopes to build four new nuclear reactors and plans to establish an enterprise for the production of nuclear fuel. However, because these plans are meeting strong resistance from the West, their realisation is unlikely.

With the aim of increasing the productivity of thermal and hydroelectric power stations, a plan for their privatisation was worked out. According to a government decree issued in 1995, the thermoelectric power stations were given to four newly created joint stock companies. Two further companies were formed out of the hydroelectric stations. In a first step a share in the companies (9-30%) is being sold to the workers and management. In a second step a further share in the companies (19-40%) will be sold to strategic investors in 1997-98. The state will keep a controlling stake of no less than 51% in all companies. Shares in the companies are now being traded on the country's stock market.

**Table 8.3: Ukraine's electricity production, 1970-1997**

	1970	1980	1990	1992	1993	1994	1995	1996	1997 <sup>1</sup>
Production (bn kWh)	138	236	299	251	230	202	194	181	175
Share of thermoelectric stations (%)	95	91	69	67	63	60	56	50	48
Share of nuclear stations (%)	0	5	28	30	32	34	39	44	46
Share of hydroelectric stations (%)	5	4	3	3	5	6	5	6	6
1 Estimate.									
Sources: <i>Encyclopedia of Ukraine</i> ; Ukrainian Ministry of Statistics									

**International support**

In January 1997 the World Bank began the disbursement of a \$317m loan for the realisation of the electricity market development project. The project is intended to support the development of the wholesale market for electricity and to promote other market orientated reforms in the power sector. The World Bank hopes that the project will increase efficiency and reliability of electricity supply and use, and at the same time improve the financial viability of power sector enterprises. The project provides funding for fuel and spare parts for power generating companies participating in the electricity wholesale market as well as funding for metering and other equipment for electricity distributors.

Further international projects aim at improving the situation of specific power stations. The most important project in this context is the offer of the G-7 to finance the closure of the Chernobyl nuclear power plant. A World Bank programme provides a \$114m loan for rehabilitating Ukraine's hydroelectric power stations. The World Bank is also preparing projects for the rehabilitation of the Krivoi Rog power plant and the Luhansk power plant.

**Transmission**

In the Soviet period Ukraine was linked with Moldova in a Southern Grid and the Odessa region is still supplied from Moldova. Since the implementing decree in May 1995 four corporations have been formed to operate thermal power enterprises and two for hydroelectric enterprises, while Goskomatom was required to prepare itself for corporatisation. These energy systems are connected with each other by transmission lines with a voltage of 750-800kV. The most powerful is the Trans-Ukrainian Line which runs for a distance exceeding 1,000km from the Donets basin to western Ukraine and was constructed in the 1970s. In the 1990s Ukraine has a transmission network with a length of more than 1m km.



In the 1980s Ukraine's transmission network was connected with Hungary, Poland and Slovakia. Through these transmission lines Ukraine provides east European countries with electricity. But the export of electricity declined sharply in the wake of Ukraine's energy crisis in the 1990s. In 1991 Ukraine had exported nearly 25bn kWh. In 1994, when the energy war with Russia reached its peak, Ukraine exported less than 2bn kWh and in the following years the export of electricity remained below 5bn kWh annually. Because of unreliable deliveries Ukraine has effectively been cut off from the central European transmission system, Centrel.

The state of Ukraine's domestic transmission network is one of the reasons for the country's severe energy crisis. A quarter of the transmission lines have already been in use for more than 20 years and need to be replaced urgently. About 5% of the lines are actually no longer able to transmit electricity. The condition of the transmission network is responsible for regional breakdowns in electricity supply. Net losses of electricity, mainly due to transmission problems, amounted to nearly 19bn kWh, i.e. 10% of total production in 1995. The fact that frequency at Ukrainian transmission lines sometimes drops below danger level following sudden shutdowns of power stations has already led to some disconnections between Russia's and Ukraine's power grids.

Moreover, the network does not allow for sufficient west-east power transmission. No more than 12,000MW can be transmitted to deficit regions. To improve the efficiency of the transmission network Ukraine plans to construct two 750kV lines. The one from the Chernobyl nuclear power plant (Chernihiv region) in the north to the Southern Ukraine nuclear power plant (Mykolaiv region) in the south is currently under construction and is expected to be completed in 1998. The other transmission line is planned to run from the Khmelnytsky nuclear power station (Khmelnytsky region) in western Ukraine by the Dniester pumped storage hydroelectric power station (Chernivtsi region) to southern Ukraine.

The state company Ukrelektroperedacha is responsible for the transport of electricity through the main transmission lines. It was formed on 1 January 1996 from the transmission networks of the eight former energy systems. Accordingly, Ukrelektroperedacha is a monopolist in the sphere of high voltage electrical networks. It owns the main and interstate transmission networks with a voltage of 220kV and more, including the infrastructure. The company supplies electricity to a number of regional distributors and directly to some large customers. The cost of Ukrelektroperedacha's services is included in the wholesale tariff. Following the general non-payment crisis in the electricity sector the company is experiencing considerable financial problems.

The 27 regional power distributors (oblenergos) purchase electric power from Ukrelektroperedacha at the wholesale tariff, which is set by the state, and sell the power to consumers in their region at the regulated retail tariff. Each regional power distributor controls the regional transmission network of lines below 220kV.

## Consumption

Industry is by far the largest consumer of electricity in Ukraine (see Table 8.4). Whereas the electrification of production in food processing and light industries lags behind that of the West, the heavy industry of Ukraine needs more electricity because of its energy-intensive production technology.

**Table 8.4: Electricity consumption in Ukraine by sector, 1995**

Sector	Share in total consumption (%)	Consumption (bn kWh)
Industry	52	99.9
Private households and communities	19	37.7
Agriculture	12	23.8
Transport	6	10.8
Net export	1	3.0
Net loss	10	18.8
<b>Total</b>	<b>100</b>	<b>194.0</b>

Source: Ukrainian Ministry for Energy and Electrification

Electrification of Ukraine's agriculture has been slow and the energy shortage has been one of the major causes of the country's agricultural crisis. The electrification of transport is more advanced. Already in 1980 electric locomotives pulled more than 60% of the freight. In 1996 about 9,000km of the 22,800km of railway tracks in Ukraine were electrified.

Electricity consumption of private households has traditionally been low in Ukraine. Appliances such as washing machines, dryers and computers are not at all as widespread as in the West. Moreover, gas, not electricity, is used for home heating and cooking.

Ukraine was an important exporter of electricity in Soviet times, when it delivered about 25bn kWh a year to its east European neighbours. But with the post-Soviet crisis in the Ukrainian energy sector electricity exports declined sharply to a record low of less than 2bn kWh in 1994. In 1993 and 1994 Ukraine, therefore, became a net importer of electricity, with imports from Russia of more than 5bn kWh in both years. In 1995 Ukraine again became a net exporter of electricity by reducing imports to 3.5bn kWh and increasing exports to 4.5bn kWh. With the expansion of nuclear electricity production, Ukraine hopes to increase its electricity exports further and to deliver 16bn kWh to eastern Europe by the year 2000.

Because of the general economic crisis, marked by a decline in GDP of more than 50%, Ukraine's total electricity consumption has gone down sharply. Between 1990 and 1996 it fell by more than a third (see Table 8.5).



**Table 8.5: Ukraine's electricity consumption, 1970-1997**

	1970	1980	1990	1992	1993	1994	1995	1996	1997 <sup>1</sup>
Consumption (bn kWh)	137	234	270	247	227	197	191	178	170
1 Estimate.									
Sources: <i>Encyclopedia of Ukraine</i> , Ukrainian Ministry of Statistics									

Consumption is in decline not only because of falling demand caused by the economic crisis. Electricity consumption in Ukraine is also limited by supply side factors. The inability of power stations to work at capacity and problems with transmission lines lead to regional breakdowns in electricity supply. Moreover, electricity is becoming more expensive as a result of the gradual cutting of state subsidies. The rise in electricity prices worsens the crisis of energy-intensive industries such as metallurgy, chemicals and machine-building. As a result they are no longer able to pay for their electricity supplies. In September 1997 Ukrainian customers owed about \$1.8bn to the country's power stations. The electricity producers in their turn had accumulated debts of nearly \$2bn for fuel supplies.

The government, backed up by the World Bank, reacted with a complete reform of the payment system. According to a government decree issued in May 1997, Ukrainian electricity producers must sell electricity through registered wholesalers and are no longer allowed to make special deals directly with customers. The aim is to bring an end to barter deals unfavourable to the electricity producers which are short of cash. At the same time electricity prices are to be increased considerably to finance the modernisation of electricity production. Prices will be set by the state institution, Energorynok, according to production costs. To end the non-payment crisis in the electricity sector, the decree also stated that from June 1997 electricity should be supplied only to customers who have paid all their bills in cash. Only institutions of special significance such as the armed forces or hospitals are excluded from that rule.

The government decree caused controversy in Ukraine and parliament then decided against the rise in electricity prices. The World Bank reacted by stopping the disbursement of its loan for restructuring the Ukrainian electric power sector.

In the longer run, though, Ukraine is in the process of developing a wholesale electricity market based on the British model, which will use cost-plus pricing. According to a forecast by Alfa Capital Ukraine, 'when completed this structure should dramatically reduce the problem of non-payments that has plagued the sector in the past and improve the financial condition of the generating sector in general. We expect that the new Ukrainian wholesale electricity market will begin to function fully in 1998.'

## THERMOELECTRIC POWER STATIONS

### Privatisation

According to a government decree dated 27 May 1995 four joint stock companies – Tsentroenergo, Dneproenergo, Donbasenergo and Zapadenergo (Westernenergo) – were created from Ukraine's 14 large thermoelectric stations (see Tables 8.6 and 8.8). All four companies have completed the first stage of privatisation, during which shares were sold to workers and management. They are now in the second and final stage, where shares will be sold to strategic investors. A controlling stake of no less than 51% in all four companies remains state property.

Any Ukrainian or foreign investor who is willing to invest the minimum amount can participate. This minimum amount of investment is defined by the privatisation plan for the company concerned. The dates for the tender will be set by the government. The winner of the tender will be determined by the tender commission. Shares in all four companies are beginning to be actively traded on the nascent Ukrainian stock market.

**Table 8.6: Thermoelectric power stations in Ukraine, 1997**

Station and location	Region	Capacity (MW)	Generators (number x capacity)
<b>Dneproenergo</b>			
Krivoi Rog 2 (Zelenodolsk)	Dnipropetrovsk	2,820	10 x 282
Pridneprovsk (Dnipropetrovsk)	Dnipropetrovsk	1,740	4 x 150 + 4 x 285
Zaporozhye (Energodar)	Zaporizhia	3,600	4 x 300 + 3 x 800
<b>Donbasenergo</b>			
Kurakhovo (Kurakhove)	Donetsk	1,460	1 x 200 + 6 x 210
Lugansk (Shchastya)	Donetsk	1,600	8 x 175 + 2 x 100
Slavyansk (Slovyanka)	Donetsk	1,520	1 x 720 + 1 x 800
Starobeshevo (Novy Svit)	Donetsk	1,750	10 x 175
Zuyevka 2 (Zugres)	Donetsk	1,200	4 x 300
<b>Tsentroenergo</b>			
Tripolye (Ukraiinka)	Kiev	1,800	6 x 300
Uglegorsk (Debaltseve)	Donetsk	3,600	4 x 300 + 3 x 800
Zmiyev (Komsomolske)	Kharkiv	2,150	6 x 175 + 4 x 275
<b>Zapadenergo</b>			
Burshtyn (Burshtyn)	Ivano-Frankivsk	2,300	9 x 195 + 4 x 185
Dobrotvor (Dobrotvir)	Lviv	600	2 x 150 + 3 x 100
Ladyzhinka (Ladyzhinka)	Vinnitsya	1,800	6 x 300

Note: The locations are in Ukrainian, the enterprises in Russian.

Sources: Alfa Capital Ukraine



## Finance

The financial state of Ukraine's four thermoelectric power producers worsened considerably in 1996 (see Table 8.7) for three main reasons:

- the non-payment crisis – customer arrears and disadvantageous barter deals have stripped the companies of cash;
- the tariff system – the state set very low tariffs in 1996 to subsidise industrial production and private households. As a result generating companies were working at a loss;
- bad management – the financial situation of some of the companies was further worsened by the conclusion of inappropriate contracts for fuel supply and by losses from subsidiary activities over several years.

**Table 8.7:**  
**Aggregated financial results for Ukraine's thermal generating companies, 1995 and 1996**

	1995	1996
Net sales (\$m)	1,451	1,552
Operating costs (\$m)	1,135	1,294
Fixed costs (\$m)	207	232
Pretax profit (\$m)	108	35
Net profit (\$m)	76	18
ROS (%)	5.24	1.16
ROA (%)	3.33	0.26
ROE (%)	9.23	0.35
Source: Alfa Capital Ukraine		

When the Ukrainian wholesale electricity market begins to function fully, the country's thermal generating sector is expected to produce sizeable profits on the basis of cost-plus pricing. According to an estimate by Alfa Capital Ukraine, aggregated revenues of all four thermal generating companies will rise from \$1.6bn in 1996 to \$2.8bn in the year 2000. It is estimated that annual operating profits will have risen to \$0.25bn by then.

## Fuel supply

Much of the capacity of Ukraine's thermoelectric power stations is flexible in its fuel use, i.e. most power stations are able to fire coal, natural gas and residual fuel oil (mazut). Eight of Ukraine's 14 thermoelectric power stations are located close to the coal mines of the Donbas. Only the three power stations in western Ukraine, operated by Zapadenergo, are situated so far from domestic coal resources that they use imported coal from Silesia (Poland). The other main fuel for Ukraine's thermoelectric

power stations is natural gas. All four thermal generating companies in Ukraine use imported gas from Russia.

Ukrainian efforts to reduce dependence on Russian oil and gas supplies, in combination with Russia's unwillingness to deliver as long as debts remain unpaid (see Chapter 6), have increased the relevance of coal as fuel for Ukraine's thermoelectric power stations during recent years (see Table 8.1). The Ukrainian government is working on a programme to transform the power stations into predominantly coal-fired ones, using the lower caloric Donbas coal. In 1997 coal already accounted for 64% of fuel used at thermoelectric power stations in Ukraine. The share of natural gas stood at 32% and the remaining 4% of the fuel mix consisted of mazut.

The main problem with the increased use of coal in Ukraine's thermoelectric power stations is the relatively low quality of domestic coal. During the past 20 years the ash content of Ukraine's coal has risen from 26-31% to 36-38%. The energy equivalent has declined from 20-22 mjoule/kg to 18 mjoule/kg in the same period.

### **Company profiles**

#### ***Dneproenergo***

Dneproenergo (in Ukrainian: Dniproenergo) is the biggest electric power producing company in Ukraine, with a capacity of 8,160MW. It has a share of 15% in Ukraine's total domestic capacity. The power stations of Dneproenergo use mainly coal (58%) and Russian gas (38%) as fuel.

The company has always received special attention from the state. As a result eight power blocs with a capacity of 1,728MW were reconstructed between 1984 and 1991. In the mid-1990s the government again decided to give the biggest share of credits for reconstruction to Dneproenergo together with Donbasenergo. The reconstruction of the Krivoi Rog power plant will be financed by a \$179m loan. The reconstruction will lead to improved use of coal, better plant availability and less environmental pollution.

#### ***Donbasenergo***

Donbasenergo (in Ukrainian: Donbassenergo) operates five thermoelectric power stations with a share of 14% of Ukraine's total domestic capacity. The company's power stations, all located in the Donetsk region, use coal from the region as their main fuel.

The basic problem of Donbasenergo is its outdated technology. With a specific equivalent of fuel use of 407g/kWh, its power stations have an extremely low efficiency even by Ukrainian standards. That is why Donbasenergo also receives a large share in financial aid meant for the reconstruction of Ukraine's thermoelectric power stations. The EBRD has agreed to grant a credit to support the modernisation of the Staroveshevo power plant. The World Bank plans to offer a loan for the



reconstruction of the Luhansk power plant in 1998. One of the aims of the project is to allow the use of low grade coal with ash content up to 20%.

### *Tsentroenergo*

Technologically, Tsentroenergo (in Ukrainian: Isentroenergo) is the best of the four thermoelectric power companies in Ukraine. With 357g/kWh it has the most efficient fuel consumption and as a result the lowest variable costs. The three power stations of the company have a share of 14% in Ukraine's total domestic capacity. They are all situated in a region which is characterised by a constant high demand for electric power.

The main problem of Tsentroenergo is the age of its power blocs. With an average age of 27 years, the company's blocs are the oldest among Ukraine's thermoelectric power companies. The oldest bloc still working at Tsentroenergo was put into operation as long ago as 1960. Since only one of Tsentroenergo's power stations is located adjacent to coal resources, more than half of the fuel used by the company's stations is natural gas from Russia.

According to recent plans one power bloc will be reconstructed at the Zmiyev power station. Further reconstruction projects, envisaged for the Uglegorsk and Tripolye power stations in a government programme, did not materialise. The problem for Tsentroenergo is that its direct competitors for state funds, Donbasenergo and Dneprenergo, have enjoyed greater political support.

### *Zapadenergo*

Zapadenergo (in Ukrainian: Zakhidenergo) is the smallest of Ukraine's four thermoelectric power companies with a share of 8% in Ukraine's total domestic capacity. Zapadenergo has the best situation as its capacities are not as obsolete as the others and it has a more advantageous cost structure. The company's power stations, all located in western Ukraine, use imported coal from Poland as their main fuel.

**Table 8.8: Ukraine's thermal generating companies – key indicators, 1997**

	<b>Tsentroenergo</b>	<b>Dneproenergo</b>	<b>Donbasenergo</b>	<b>Zapadenergo</b>
Total capacity (MW)	7,550	8,160	7,330	4,400
Average age (years)	27	21	25	25
Depreciation (%)	53	58	52	23
Fuel use (g/kWh)	357	380	407	385
Nominal shareholders' equity (\$m)	50.8	53.9	129.9	70.3
Par value of share (\$)	0.1	13.5	5.5	5.5
Number of shares	369,407,108	3,923,998	23,646,301	12,790,541
Source: Alfa Capital Ukraine				

Zapadenergo has the most effective management. But since most funds for reconstruction are designated for the more outdated power stations in eastern Ukraine, Zapadenergo is likely to lose much of its comparative advantage vis-à-vis the other three thermoelectric power companies.

Zapadenergo's power station in Burshtyn exports electricity to eastern Europe. The company would, therefore, benefit from plans to increase electricity exports from 5bn to 16bn kWh by the year 2000.

### Future prospects

Alfa Capital Ukraine assesses the future prospects of Ukraine's thermoelectric power stations as follows:

'Despite the relative age of thermal capacity and large existing nuclear and hydroelectric capacity (the major competitive threat to thermal generators), we believe that thermal production will remain a viable and profitable sector in the medium and long run (5-15 years). This is due primarily to political factors as the Ukrainian government is expected (1) to edge away from nuclear production (going from 44% of total production in 1996 to 41% in 2000); (2) to actively attempt to secure funding from international agencies to refurbish existing thermal capacity and build new capacity; and (3) to protect the Ukrainian producers from foreign competition. Long-term net income will be positive as a whole due to cost-plus pricing, with ROS of 20% in 2000. With the shares of the four companies relatively undervalued [when comparing P/C and P/O ratios, see Table 8.9], we see interesting investment opportunities and recommend buying shares at this time [summer 1997].

'The major uncertainty surrounding the sector as a whole is the magnitude of profits; this will depend upon how much electricity thermal producers can sell and what mark-up the government will allow. Factors which would reduce potential thermal production include (1) increases in future nuclear and hydroelectric production and (2) declines in overall Ukrainian demand. Another risk is that the new market structure fails to rectify the current problems of non-payment, or the government fails to effectively implement this structure.'

**Table 8.9: Ukrainian and Russian thermal generating companies, 1996**

	Market capital- isation <sup>1</sup> (\$m)	Output (bn kWh)	Sales (\$m)	Net profit (\$m)	P/E	P/S	P/C	P/O
Ukraine <sup>2</sup>	347	24	517	6	57.7	0.67	0.037	0.015
Russia <sup>3</sup>	1,484	40	2,273	352	4.2	0.65	0.157	0.037

1 As of June 1997.

2 Average of Dneproenergo, Donbasenergo and Zapadenergo.

3 Average of Lenenergo, Mosenergo and Sverdlovenegero.

Source: Alfa Capital Ukraine



## NUCLEAR POWER STATIONS

At present Ukraine has five nuclear power stations with an installed capacity of 14,000MW (see Table 8.10). Although this is only a quarter of Ukraine's total capacity, nuclear power stations accounted for nearly half of the country's electricity production in 1997 (see Table 8.3). Their share has been rising mainly because the production of thermoelectric stations has been in permanent decline. Nevertheless, Ukraine's nuclear power stations themselves seldom operate at full capacity because there are technical problems with outdated technology.

**Table 8.10: Nuclear power stations in Ukraine, 1997**

Name of station (Ukrainian name of location)	Region	Capacity (MW)	Energy blocs (number x capacity)
Chernobyl (Chernobyl)	Chernihiv	2,000 <sup>1</sup>	2 x 1,000
Khmelnitsky (Netishyn)	Khmelnysk	1,000	1 x 1,000
Rovno (Kuznetsovsk)	Rivne	1,818	1 x 1,000 + 1 x 416 + 1 x 402
Southern Ukraine (Pivdennoukrainsk)	Mykolaiv	3,000	3 x 1,000
Zaporozhye (Energodar)	Zaporizhia	6,000	6 x 1,000

<sup>1</sup> One of the two blocs was halted by the end of 1996, but was not fully decommissioned in 1997.

Source: Finansovaya Ukraina 08 April 1997

### Ukraine's nuclear energy policy

The 1986 Chernobyl accident, the most serious in the history of nuclear power production, caused widespread public hostility to nuclear power and was an important reason for the formation of an anti-Soviet movement in Ukraine (see Chapter 2). In reaction to public demand, a moratorium on the construction of nuclear power stations was imposed in 1990 and five energy blocs were left unfinished. The date for closing Chernobyl was set at 1995 and in the following year the date was brought forward to 1993.

The energy crisis which Ukraine experienced in the following years (see Chapter 3) caused a rethink. In 1993 the moratorium was lifted and the closure of Chernobyl was postponed. In 1995 a new energy bloc was put into operation at the Zaporozhye nuclear power plant.

Although Ukraine still suffers from the consequences of the Chernobyl catastrophe the country is now determined to continue the development of its nuclear power sector. For Ukraine nuclear energy has two main advantages. First, it is the cheapest source of electric power in Ukraine. The production of 1kWh costs about \$0.02 at a nuclear plant and more than \$0.03 at thermoelectric plants. Accordingly the country has plans to complete the construction of four further nuclear power reactors by the year 2000. Second, domestic nuclear power production reduces Ukraine's

dependence on Russian energy supplies. If Ukraine's thermoelectric power stations were converted completely to coal firing and the nuclear power stations were able to compensate for the resulting decline in thermal electricity production, Ukraine's power generating sector would be largely self-sufficient.

To accomplish that, however, would cause immense financial problems for Ukraine. Remaining construction work on the four new reactors is estimated to cost about \$2.5bn. But Ukraine does not even have the funds necessary to finance the operation of the existing nuclear power plants. Because of the general non-payment crisis the nuclear power stations are short of cash. Customer debts had risen to about \$1bn by mid-1997. As a result the nuclear power stations were two months in arrears with wage payments to their workers and were unable to pay for nuclear fuel supplies from Russia. Moreover, the nuclear power plants were only able to pay for 30% of the necessary maintenance and repair work in 1997.

For these reasons, the development of Ukraine's nuclear energy sector can only be financed with the help of western governments. To receive such help Ukraine is playing the Chernobyl card.

### **The Chernobyl accident**

On 26 April 1986 the fourth bloc of the Chernobyl nuclear power plant was destroyed by an accident which released 50 mCi of radioactivity into the environment (see Chapter 1). From 1986 to 1996 Ukraine has on average spent 6% of each year's budget in order to deal with the consequences of the disaster. The money comes primarily from obligatory contributions to the Chernobyl fund, which all registered companies and all employees in Ukraine have to pay. A considerable amount of the money has been used for work in the contaminated area. But most of the funds have been given as compensation to victims (and alleged victims) of the accident.

To extinguish the burning reactor Soviet engineers encased it in concrete. The resulting concrete sarcophagus embeds some 220 tonnes of highly radioactive materials. In 1990, 1995 and late 1996 measuring instruments inside the sarcophagus several times indicated a considerable increase in neutron levels. It was feared that the migration of radioactive materials inside the melted-down reactor fuel might lead to a chain reaction and a subsequent explosion of the sarcophagus. In addition, cracks which allowed water to enter were detected in the sarcophagus. According to a report by the State Nuclear Committee the safety of the sarcophagus deteriorated further in early 1997 because of moisture build-up, insufficient monitoring and inefficient contingency plans to deal with a chain reaction. There were also concerns that the structure might not withstand an earthquake.

Because of these security concerns, plans for the construction of a new sarcophagus were quickly developed. But an international competition for the best design, which was conducted in 1993, did not produce a satisfactory proposal. In 1994-95 a European consortium conducted a feasibility study for the construction of a new sarcophagus. But the proposal worked out by the consortium was rejected because estimated costs of at least \$1bn were considered to be too high. A further study was conducted, which was based on lower demands and found a cheaper solution. In



April 1997 an international team of experts began work to stabilise the sarcophagus. The American company Westinghouse started a project to construct a storage facility for used nuclear fuel and a facility for processing liquid nuclear waste. It is planned to build a new shell around the old sarcophagus and later, in a second step, to remove the remaining nuclear fuel. Work at the sarcophagus is expected to be completed by 2005.

### **Closing Chernobyl**

The West, and in particular the G-7, have made demands for the closure of Chernobyl one of the top priorities of their policy towards Ukraine. In response, Ukraine has played the Chernobyl card to maximise financial support from the West. Moreover, the country has been unwilling to accept western demands for a downsizing of the nuclear power sector.

Accordingly negotiations are complicated and the closing of Chernobyl has become a permanent issue on the international agenda. In December 1995 Ukraine signed an agreement on the closure of Chernobyl by the year 2000 with the G-7 countries and the European Commission. The agreement provides \$1.809bn in loans and \$0.498bn in grants. The money is to be used for an energy investment programme, for improvements in nuclear safety and for a social impact plan. The energy investment programme includes the completion of two nuclear reactors (one at Khmelnytsky and one at Rovno) as well as the rehabilitation of thermo- and hydroelectric power plants and the introduction of measures to save energy.

Though the agreement was ratified by the Ukrainian parliament and is therefore binding, the government continued to question the closure of Chernobyl. Partly giving in to such pressure, in 1996-97 the West promised to finance the construction of a new sarcophagus at Chernobyl after completion of a feasibility study. The costs of this project are estimated to amount to some \$750m. The total value of the western aid package, promised for the closure of Chernobyl, is about \$3bn.

In early 1997 the EBRD, which is to finance much of the agreed programmes, spoke out against the construction of the two nuclear reactors at Khmelnytsky and Rovno, for which \$1.2bn has been earmarked. According to a study conducted by independent experts on behalf of the EBRD, it would be more useful to spend the money on energy-saving programmes, since this would be an easier way to guarantee sufficient electricity supplies for the future. According to its charter the EBRD can only finance projects which are cost-effective and hence it is not permitted to finance construction of the new reactors in Ukraine. American officials have stated that the US will withdraw its support if the EBRD also does so.

Ukraine responded by declaring that Chernobyl might not be closed by 2000 if the West refused to fund the construction of the nuclear reactors. However, President Kuchma told the UN General Assembly in June 1997 that Chernobyl will be closed by the year 2000, but he also confirmed Ukraine's intentions to construct further nuclear reactors. In November the Ukrainian government and the EBRD signed an agreement defining the details of the \$750m aid packages for construction of the

sarcophagus. This project is therefore likely to go ahead. But the future of the further plans for the Ukrainian nuclear power sector remains unclear.

### **Remaining security risks**

There are two different reactor types in operation at Ukraine's nuclear power stations: graphite-moderated reactors (RBMK-1,000) and pressurised water reactors (VVER-440/213 and VVER-1000/320).

The RBMKs are causing the highest security risks of all Soviet-type reactors. There are four main problems:

- a higher risk of a runaway chain reaction (positive void effect);
- a higher risk of fire caused by the graphite moderator;
- inadequate safety systems;
- the fact that the reactor has to be refuelled while it is still on-line.

All of Ukraine's four RBMK-1,000 reactors were put into operation at Chernobyl between 1977 and 1983. The fourth reactor exploded in 1986. The second reactor was closed after a fire in 1991. The first reactor was halted in 1996, but not fully decommissioned. The third reactor should be closed by the year 2000 according to the agreement between Ukraine and the G-7. Until then Ukraine will receive some money for short-term upgrades to improve safety. In June 1997 the third reactor was shut off for maintenance. After cracks in the piping of the reactor were found it was announced in October 1997 that the reactor would not be able to start working again before an unspecified date in 1998.

The VVER designs employed in Ukraine are of a newer generation and conform more closely to western safety standards. At present there are 11 VVER-1000 reactors and two VVER-440/213 reactors (at the Rovno nuclear power station) working in Ukraine. The reactors which Ukraine plans to construct would all be of the VVER-1000 design. Though these reactors pose fewer risks than the RBMKs, management, operational and regulatory aspects still give cause for concern.

Because there has been considerable upgrading and modernisation of all reactors since the Chernobyl accident the number of serious incidents has declined permanently (see Table 8.11). However, to reduce these incidents several reactors have to be shut down every year for maintenance work and repairs. As a result Ukraine's nuclear power stations are working far below capacity for most of the time.

Whereas there were, for example, no serious accidents at the Zaporozhye nuclear power station in 1995 and 1996, reactors had to be shut several times. Unit 1 was closed in April 1995 for several months. In May the remaining reactors were working at a reduced load. In summer 1995 units 3 and 5 had to be closed. Unit 6 had to be closed in November 1995 and again in February 1996. A radioactive water leak was



detected at unit 3 in March 1996 and in April 1996 unit 1 suffered an emergency shutdown. In May unit 2 had to be closed for maintenance.

**Table 8.11: Number of incidents at Ukraine's nuclear power plants, 1989-1996**

	1989-93	1994	1995	1996
Chernobyl	14 (2)	2 (0)	2 (1 <sup>1</sup> )	1 (0)
Khmelnitsky	17 (1)	1 (0)	0 (0)	2 (0)
Rovno	8 (2)	0 (0)	1 (0)	0 (0)
Southern Ukraine	7 (1)	2 (1)	1 (0)	0 (0)
Zaporozhye	23 (8)	1 (1)	0 (0)	0 (0)
<b>Total</b>	<b>69 (14)</b>	<b>6 (2)</b>	<b>4 (1<sup>1</sup>)</b>	<b>3 (0)</b>

1 Ines level 3

Note: Only incidents rated at Ines level 1 or more were considered. The number of incidents rated at Ines level 2 is given in brackets.

Source: Judith Perera 1997, *The nuclear industry in the former Soviet Union*

The security situation at Ukraine's nuclear power stations is worsened by the fact that many experts are emigrating to Russia because of the non-payment of wages in Ukraine. More than 10,000 Ukrainian experts have left for Russia since the break-up of the Soviet Union. There is a demand for Ukrainian nuclear scientists in Russia, because many Russian experts have accepted new jobs in the West.

The Ukrainian minister for the environment declared in April 1997 that the safety situation in the country's nuclear plants was unsatisfactory. According to the State Nuclear Committee, Ukraine's nuclear power plants could afford to pay for only 30% of the necessary repair works in 1997 due to financial problems. The result will be a further deterioration in the situation.

### **Nuclear fuel cycle**

Ukraine plans to develop a complete nuclear fuel cycle on its territory, meant to guarantee the independence of the country's nuclear power sector from Russian or any other foreign supplies. Accordingly the government has drawn up a programme for the development of nuclear fuel cycle facilities until the year 2010.

### ***Uranium mining and processing***

Ukraine's uranium reserves are estimated to last for at least 100 years. At present uranium is being extracted from underground mines in the Kirovhrad region. The annual production capacity of these mines is 800 tonnes of uranium bioxide (see Chapter 1). The uranium bioxide is processed into yellowcake ( $U_3O_8$ ) and uranium tetrafluoride at the Vostochny plant in Zhovti Vody (Dnipropetrovsk region).

Production covers a third of domestic needs. But since nuclear power stations are unable to pay for deliveries the Zhovti Vody plant faces severe financial problems. It is, therefore, not likely that plans to expand mining and processing activities will be realised soon.

### *Nuclear fuel production*

In Soviet times Ukraine delivered uranium and zirconium to Russia and Kazakhstan for the production of nuclear fuel. After the break-up of the Soviet Union, Russia demanded \$300m annually for further deliveries of nuclear fuel. As the result of lengthy negotiations, in which the US played an important role, it was agreed that Russia would supply Ukraine free of charge with nuclear fuel until 1997 in return for the nuclear missiles on Ukrainian territory, all of which were to be transferred to Russia for dismantling.

The exchange of Russian nuclear fuel for Ukrainian nuclear warheads was managed by the Russian fuel supplier TVEL. Since TVEL, too, is in financial difficulties nuclear fuel deliveries to Ukraine have not always been made in time. Moreover, the exchange deal includes only nuclear fuel for VVER reactors. The Chernobyl power plant, which is the only one in Ukraine to operate RMBK reactors, has to pay for nuclear fuel deliveries from Russia. In March 1997 it had accumulated a debt of \$35m and had to halve its power output because of fuel shortage. After repayment of a fifth of the debt Russian deliveries were resumed, however.

Since it was clear that free Russian fuel deliveries would come to an end in 1997, Ukraine developed plans for the domestic production of nuclear fuel for its 11 VVER-1000 reactors. It would not make sense to produce fuel for the two VVER-440 units or for the one RMBK reactor still working at Chernobyl. These reactors will, therefore, continue to depend on Russian fuel supplies.

In January 1996 the Russian company TVEL won the tender for construction of the fuel assembly plant. An agreement was drawn up for the foundation of a Russian-Ukrainian joint venture for the production of VVER-1000 nuclear fuel in Ukraine. It is expected that in the year 2001 Ukraine's nuclear power stations will begin to receive their fuel from the joint venture. Whereas most of the nuclear fuel production will take place in Zhovti Vody in Ukraine, the enrichment of uranium will still be conducted in Russia.

### *Nuclear waste disposal*

In Soviet times nuclear waste was stored on the site of the nuclear power stations and regularly brought to Russia for storage or reprocessing (in the case of the two VVER-440/213s). After the break-up of the Soviet Union, Russia at first demanded payment for the disposal of nuclear waste from Ukraine and then adopted a law which prohibited the import of radioactive wastes. Nevertheless, Russia again accepted nuclear waste deliveries from Ukraine after mid-1995.

In 1996 Ukraine established a state register of waste repositories and temporary storage sites. Since the storage facilities at Ukraine's nuclear power stations have only a limited capacity and are, furthermore, in bad shape, Ukraine began to develop



plans for the construction of spent fuel storage. As early as 1994 Ontario Hydro International Inc (Canada) was awarded a contract worth \$2.9m to adapt its high density concrete spent fuel technology for use in Ukraine. The company is designing canisters for spent fuel storage at Chernobyl and Rovno. The canisters will then be constructed in Ukraine, which will have to pay a licensing fee to the Canadian company.

In addition Ukraine started to look for possible sites for the construction of a long-term storage for nuclear waste. The final waste repository will have a capacity of 100,000 cu metres, sufficient to store all of Ukraine's nuclear waste. After preliminary investigation, the Institute of Geology (Ukrainian Academy of Sciences), the State Geological Committee and the State Committee for Atomic Energy chose 12 possible sites for construction of the repository. But further examination of these sites, including initial drilling, has so far been hampered by the lack of funds.

### **Future prospects**

At present Ukraine's nuclear energy sector stands at the crossroads. Ukraine has drawn up a comprehensive plan for the further development of the sector. The total capacity of nuclear power stations is to be increased by 15% (i.e. 2,000MW) by the year 2000, despite the Chernobyl closure. In addition, Ukraine has started to work on the construction of nuclear fuel cycle facilities. In the year 2001 domestic production of nuclear fuel is expected to start. There are also plans to expand uranium mining and to construct a final nuclear waste repository.

Ukraine's ambitious nuclear energy programme has been developed mainly for two reasons:

- nuclear energy is more than 30% cheaper than electricity produced at the country's thermal power stations. The development of the nuclear power sector could help to provide the Ukrainian economy with cheap and reliable electricity. Moreover, the production of cheap nuclear energy could again make Ukraine an important net exporter of electricity to eastern Europe;
- the development of a largely independent nuclear power sector would considerably lessen Ukraine's dependence on Russian energy supplies. As a result Ukraine would be less vulnerable to economic pressure from its mighty neighbour.

The critics of the programme concentrate on three aspects.

**Finance** The realisation of the programme would cost at least \$3.5bn. Since Ukraine is unable to guarantee the maintenance of the currently operating nuclear power stations, the programme can only be financed with the help of the West. However, western countries have proved unwilling to finance the development of the Ukrainian nuclear energy sector.

**No need for further capacity** With official domestic capacity being nearly twice as much as needed to satisfy peak demand, it would be more efficient to concentrate on

the rehabilitation of existing power stations and transmission lines. Capacity for electricity exports could also be gained by measures for energy saving, which could considerably reduce domestic demand.

**Security risks** Ukraine's nuclear power stations do not meet western safety standards. The Chernobyl accident and a large number of further accidents and incidents prove the risks connected with Ukraine's nuclear energy sector. Moreover, nuclear power stations often cannot work at capacity because of technical problems.

Although there are a number of points at issue, the decisive factor for the future of Ukraine's nuclear power sector is finance. The Ukrainian leadership seems determined to realise its programme despite all criticism. Only a lack of finance could, therefore, stop the programme, but that is the most likely case. The West will not (or at least not in full and not in time) finance the construction of new nuclear reactors in Ukraine. As a result Ukraine will be unable to construct the required reactors (or it will at least not be able to construct all four reactors and it will not be able to finish construction until the year 2000 as envisaged). As a result the capacity of nuclear power stations will remain stable until the year 2000, or perhaps even decline as a consequence of the Chernobyl closure. If the West offers finance for the rehabilitation of thermoelectric power stations, these will be able to increase production and as a result the share of nuclear power stations in Ukraine's electricity production might even decrease considerably in the longer run.

The disposal of nuclear waste will nevertheless remain a pressing problem for Ukraine and the relevant part of the country's programme is highly likely to continue, as well as the construction of a new sarcophagus at Chernobyl, which is being financed by the West. There are also good prospects for the construction of the nuclear fuel plant in Ukraine, since it would be able to work profitably and will be backed up by a competent Russian partner.

## HYDROELECTRIC POWER STATIONS

At present there are seven big hydroelectric power stations operating in Ukraine, which have a total capacity of 3,400MW (i.e. 5.5% of Ukraine's total domestic capacity) (see Table 8.12). Since hydroelectric power stations, too, experience considerable problems with outdated equipment, they have unused capacity and, on average, account for only about 5.5% of electricity production in independent Ukraine. The main function of the hydroelectric stations is the supply of electricity during peak loading.

### Dnieper cascade

The hydroelectric power stations are concentrated on the river Dnieper. The Dnieper cascade of hydroelectric stations comprises six of the seven hydroelectric power



stations currently operating in Ukraine. The first hydroelectric station on the Dnieper was finished in 1932 and was at that time the largest in Europe. In the 1950s and 1960s four others were finished. In 1975 the Kaniv station was added. Construction of the Dnieper Hydroelectric Station-2 began as early as 1969, but the station was only finished in 1981.

The large water reservoirs which were created by damming the river Dnieper are used for irrigating the arid regions of southern Ukraine and improving water supply in the industrial regions along the river. The reservoir of the Dnipropetrovsk station alone supplies water to a third of Ukraine's territory. However, the damming of the Dnieper puts a heavy strain on the river's ecological system, leading to the spread of blue-green algae and to the death of fish.

Since most of the stations have already been operating for at least 30 years, they need to be rehabilitated. All their equipment will have to be replaced by the year 2000 if the stations are to be able to continue electricity production. Since Ukraine has been unable to finance the necessary modernisation, the hydroelectric power stations of the Dnieper cascade are experiencing considerable technical problems and are permanently working below capacity. As part of the general restructuring of the power generating sector, the stations were transferred to the newly created company Dniprohydroenergo in 1995. In May 1996 the hydropower rehabilitation project was started with the help of a \$114m loan from the World Bank. The project provides funding for new turbines and generators and for an improved despatch and system control network.

**Table 8.12: Hydroelectric power stations in Ukraine, 1997**

Station	Region	Capacity (MW)	Year of construction
<b>Dniprohydroenergo</b>			
Dnieper Hydroelectric-1	Zaporizhia	651	1927-1939/1947-1950
Dnieper Hydroelectric-2	Zaporizhia	888	1974-1981
Dnipropetrovsk	Dnipropetrovsk	325	1956-1964
Kakhovka	Kherson	352	1950-56
Kaniv	Kiev region	444	1963-1975
Kiev Hydroelectric	Kiev city	586	1968
Kremenchuk	Poltava	625	1959-1962
<b>Dniesterhydroenergo</b>			
Dniester	Chernivtsi	702	1981-87
Dniester-2	Chernivtsi	(2,300)	not finished
Sources: <i>Encyclopedia of Ukraine</i> ; <i>Finansovaya Ukraina</i> 8 April 1997; <i>Tacis business guide to the energy sector in Ukraine</i> (May 1997)			

## **Other hydroelectric power stations**

### ***River Bug station***

In the 1980s plans were developed for the construction of new hydroelectric power plants by using the potential of other Ukrainian rivers. In 1984 construction of the Taschlyk station on the river Bug (Mykolaiv region) was started. But work on the station (with a projected capacity of 2,000MW) was stopped in 1990 because of the lack of finance.

### ***Dniester cascade***

Another main project was the construction of the Dniester cascade of hydroelectric power stations. The project was designed to provide western Ukraine with additional power production capacity and to regulate the river Dniester. The construction of the water reservoir at Novodnistrovsk (Chernivtsi region) prevents flooding, provides water for irrigation and improves conditions for navigation. But out of the ambitious project of a Dniester cascade of hydroelectric power stations only a smaller hydroelectric power station on the existing Dniester water reservoir is currently operating. The main station, with a projected capacity of 2,300MW, was not finished. To complete its construction \$300m would be necessary, according to the Ministry for Energy and Electrification. Nevertheless, there are plans to start building further hydroelectric power stations in the Tissa river basin and upstream Dniester after the year 2001.

Responsibility for the hydroelectric power stations on the Dniester was transferred to the newly created company Dniesterhydroenergo in 1995. The World Bank is currently preparing a Dniester pumped storage power plant project which it will finance with a \$200m loan. The project aims at an increased power supply as well as at improved frequency control and responsiveness to changes in electricity demand.

## **POWER INDUSTRY DEMAND FOR EQUIPMENT**

Most of the equipment needed by Ukraine's power stations was produced in other republics in Soviet times. Accordingly, Ukraine now depends heavily on imports to reconstruct and modernise its power sector. In the case of foreign investments or loans the equipment vendor is generally selected by tendering (see Chapter 4 for information on foreign loans for projects in the Ukrainian power sector).

According to the *Tacis business guide to the energy sector of Ukraine* (May 1997) 'an estimated demand for new power equipment within the period 1996-2010' is:

- reconstruction and replacement of 250-2,500t/h boiler units: 83 pieces;
- reconstruction and replacement of 125-800MW condensing steam-turbine units: 85 pieces;
- 125-225MW steam turbines for new power plants: 14 pieces;



- 325-345MW steam-gas units for the reconstruction of existing and building of new plants: 7 pieces;
- power-and-steam generating boilers of various capacity: 50 pieces;
- hot water boilers: 16 pieces;
- sulphur treatment equipment for TPP units: 30 pieces;
- boiler-utilisers (16 pieces), steam turbines (condensation and power-and-steam with extraction (33 pieces), 16-115MW gas turbines (28 pieces) and other equipment for power plants, electric lines, communication and control facilities.

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### Thermoelectric power stations

Details of all Ukrainian companies and state institutions of relevance for the power sector are given in Chapter 3.

All information given in this section was provided by the investment and brokerage company Alfa Capital Ukraine, 15 Bogdan Khmelnytsky St., 252001 Kiev, Ukraine, tel: +380 44 224-1915, fax: +380 44 246-4480, e-mail: office@acapital.kiev.ua. Alfa Capital Ukraine is a subsidiary of the Russian Alfa group and one of the leaders in the Ukrainian market. Alfa Capital maintains a current database with information on over 9,000 Ukrainian companies.

### Nuclear power stations

Details of all Ukrainian companies and state institutions of relevance for the power sector are given in Chapter 3.

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## CHAPTER 9: CONCLUSION

Between 1995 and 1997 the independent Ukrainian state finally achieved a stabilisation of internal and external affairs, which is likely to mark the country's situation into the next century. This stabilisation of the Ukrainian national state can be seen as the main achievement of Leonid Kuchma's presidency. However, this stabilisation has considerable shortcomings.

Internal political stability has been endangered by two main conflicts: one between a largely anti-reform parliament and a pro-reform government/president and the other between the Ukrainian nationalist western regions and the more pro-Russian eastern regions.

The conflict over reforms between the legislative and the executive branch has marked the transition process in all former Soviet republics. In nearly all republics this conflict was solved with the introduction of a new post-Soviet constitution, which provided for a strong president, dominating government affairs. In Russia the new constitution was adopted after President Yeltsin had dissolved parliament by force in October 1993. In Ukraine the adoption of a new constitution was the result of a compromise. Since that compromise was hard to negotiate, the constitution was only adopted in June 1996. Moreover, to reach that compromise, the president had to make concessions to parliament and his resultant position is not as powerful as that of his Russian counterpart. However, the new constitution and the consensus whereby it was adopted have consolidated the democratic system in Ukraine. The remaining conflicts between parliament and government/president will continue to hamper the progress of reforms; but matters will be argued out in a democratic way and there is no longer a threat to political stability.

The conflict between nationalist and pro-Russian forces is typical of those Soviet republics which have been highly russophied during their history. The nationalist stance of the first Ukrainian president, Leonid Kravchuk, alienated the pro-Russian eastern regions and promoted Crimean separatism. Kravchuk reacted to these centrifugal forces by establishing a centralist state. The Crimea, however, was granted extensive autonomy, since the centre was unable to neutralise the peninsula's anti-Ukrainian leadership. Whereas Kravchuk kept the pro-Russian regions in Ukraine by exercising his political power, Kuchma succeeded in integrating the population of eastern Ukraine into the independent Ukrainian state. His moderation of the official nationalist stance, his pragmatism and the general consolidation of Ukraine's internal and external affairs have limited the pro-Russian attitude of the population of eastern Ukraine to language and cultural matters.

An exception to this is the Crimea, where pro-Russian forces have not abandoned their political aims. As a result the Crimean question has been the biggest danger to Ukraine's internal stability. But Kuchma's policy of carrot and stick, guaranteeing a large measure of autonomy and cracking down on separatism, seems to have achieved the firm integration of the Crimea into the independent Ukrainian state. The potential for fierce political quarrels remains. But it has to be noted that Crimean



separatists have neither been able to organise a mass political movement akin to that of the pro-French forces in Canada, for example, nor has a terrorist movement emerged in the Crimea resembling those in Northern Ireland or Spain's Basque provinces.

The consolidation of the situation in the Crimea was also an important step towards rapprochement between Ukraine and Russia. Since 1991 Russia tried to establish the former Soviet Union as its sphere of influence. Nationalist forces in Russia even favour a union with Ukraine and Belarus. To promote Russian interests in Ukraine, the Russian leadership used all means possible to put political pressure on Ukraine. Ukraine, on the other hand, tried to avoid any concessions under the presidency of Leonid Kravchuk. As a result Ukrainian-Russian relations were tense and conflicts over the division of the Black Sea fleet, over the transfer of Ukraine's nuclear weapons to Russia or over Russian energy supplies to Ukraine escalated regularly.

Kuchma adopted a more moderate policy towards Russia and, what was probably more important, the Russian leadership realised that Ukraine had become a stable state and that pressure would only alienate the country further. To limit the Ukrainian partnership with Nato, Russia concluded a friendship treaty with Ukraine in May 1997. This treaty demonstrates the new pragmatic approach in Russia's policy towards Ukraine. Ukraine's territorial integrity was officially recognised by the Russian Federation. All major conflicts were settled and bilateral relations were intensified. Some potential for conflict remains and Ukrainian-Russian relations will not be smooth all the time. But future conflicts are likely to be limited to specific points. They will neither question Ukraine's territorial integrity nor will they escalate into a general conflict. A good example is the conflict over Ukrainian debts for Russian energy supplies. This conflict had always been the subject of intergovernmental negotiations and in 1993-94 it had escalated into an 'energy war' which endangered Ukrainian-Russian relations in general. In summer 1997 the situation was defused when Ukraine discussed its debt for Russian gas supplies with the Russian gas monopolist Gazprom and Russia's political leadership did not interfere.

Ukraine's external political stabilisation has been reached through the adoption of a neutral status between Russia and the West. In the beginning Russia was not willing to accept Ukraine's status of neutrality. The West, and especially the US, on the other hand, were eager to promote this status, since they considered it to be a cornerstone of a new European security order. Whereas Ukraine under Kravchuk looked only to the West, Kuchma used the co-operation with the West to force Russia to accept Ukraine's neutrality. The treaties with Russia and Nato from May 1997 are the outcome of this policy and they are likely to guarantee Ukraine's external stability in the new security environment of central and eastern Europe. Ukraine's equal openness to the West and to Russia was again demonstrated in summer 1997, when Ukraine conducted joint military manoeuvres under Nato's 'Partnership for Peace' initiative in August and joint military manoeuvres with Russia in October.

Although political stabilisation of the independent Ukrainian state has been achieved, its economic stabilisation is still not complete. Economic reforms under Kuchma led to macroeconomic stabilisation in 1996/97. Inflation was brought under control and the free fall of GDP and parallel decline in industrial production was stopped. This



was an important contribution to the internal political stabilisation of the country as well, since hyperinflation had discredited Kravchuk's policy and fostered pro-Russian feelings. Moreover, macroeconomic stabilisation has offered Ukraine the chance to obtain credits from international financial organisations such as the IMF and the World Bank.

In order to create the conditions for a sound recovery of the Ukrainian economy it is also necessary to achieve economic stabilisation at the micro level. Private entrepreneurs need a stable, favourable business environment. But private economic activities in Ukraine are hampered by inconsistent legislation, long-lasting and complicated bureaucratic procedures and corruption. Many private entrepreneurs are active in the shadow economy, thus depriving the state of urgently needed tax incomes.

The situation at the micro level is also the main problem for foreign investment in Ukraine. A number of foreign companies have withdrawn from projects in Ukraine in the light of the unfavourable business environment. In the first four years of independence (1992-95) total direct foreign investment in Ukraine amounted to a mere \$0.5bn. In 1996 alone, direct foreign investment increased by between \$0.5bn and \$0.8bn, and for 1997 an even higher increase is expected. Whereas direct foreign investments before 1995 were mainly exploratory projects, in 1996/97 important foreign companies started to prepare bigger long-term investments, meant to secure a good position in the Ukrainian market.

This is another sign that the political and macroeconomic stabilisation achieved under Kuchma is bearing fruit. But the liberalisation at the micro level is making only slow progress since changes in legislation need the approval of the largely anti-reform parliament. Moreover, corruption is a deeply rooted phenomenon in all former socialist countries, and it cannot be eliminated simply by a change in legislation. That is why foreign investors will continue to depend on support from high ranking state officials to overcome bureaucratic obstacles. But in Ukraine it became easier to get this support after the Advisory Board on Foreign Investments and the Chamber of Independent Ombudsmen had been created in 1997.

Energy is a key sector in the Ukrainian economy. The energy shortage was one of the main problems causing the dramatic decline in industrial production. Moreover, the energy sector is at the core of the non-payment crisis, which is paralysing economic activities in Ukraine. Subsidies for the coal industry are a major cause of the Ukrainian budget deficit. Accordingly, the energy sector has received the special attention of the Ukrainian government and of international financial organisations. These institutions hope that a reformed energy sector will be able to lead Ukraine out of its present economic crisis. The oil and gas sector and potentially the power generation sector, too, are relatively profitable and are, therefore, able to attract private direct foreign investment.

So far oil and gas production is the part of the energy sector which has attracted the largest number of companies from abroad. Since Ukraine lacks advanced technology there are good possibilities for secondary recoveries and bypassed areas in the Dnieper-Donets and the Carpathian region, which have been poorly exploited in Soviet times. Moreover, there are reasonable prospects of new discoveries in the



Crimea-Black Sea region. In mid-1997 about a dozen western companies were active in oil and gas exploration and production in Ukraine, most of them in secondary recovery of onshore fields. The tendering of offshore blocs started in late 1996.

The future of foreign investment in Ukraine's oil and gas production depends largely on the results of offshore exploration work in the Black Sea. If there are exploitable oil and gas reserves on the scale expected by the government, it would be profitable for western investors to tender for offshore blocs. Since many western oil and gas producers are looking for new deposits, Black Sea offshore fields could attract the necessary foreign investments.

If Black Sea offshore fields do not fulfil Ukraine's expectations, foreign investment in oil and gas production will continue to concentrate on onshore fields. Since the relevant onshore regions are already in a mature stage of exploration, perspectives for foreign investors would be limited.

Another problem still hampering foreign investment in Ukraine's gas production is the fact that the country's wholesale gas market has still not been liberalised. The state continues to regulate market access and prices in that market. This can effectively cut off a producer's access to the market, as has been demonstrated by the case of the British-Ukrainian joint venture Poltava Petroleum Company, which had to store its gas production in 1996 and regained access to the market in 1997 only as a result of its contacts with the relevant state company.

Uncertainty over the amount of exploitable reserves and restrictions on sales in the domestic market are the main problems to be considered in connection with investment in oil and gas production. Whereas the first problem can only be tackled by geological exploration work, the best way to avoid the second is to co-operate with a competent and influential Ukrainian partner.

Foreign investment in Ukraine's oil and gas transport system is subject to different rules. These investments are part of larger projects designed to ensure the transit of Russian and Caspian oil and gas to European markets. Accordingly, estimates of future oil and gas production in these regions and the development of alternative export routes will determine the amount of foreign investment in Ukraine's transit pipeline network. If Caspian oil producers continue to experience severe problems with their oil evacuation, they might be willing to invest in the construction of infrastructure necessary for the transit of Caspian oil through Ukraine.

Foreign investment in Ukraine's power generation sector is being hampered by the lack of liberalisation in the electricity market. Only when electricity prices are freed or at least can be raised considerably will Ukraine's power generators be able to work profitably. In that case foreign investments in thermal power generating companies offer promising perspectives. The organisational structure of the electricity market has already been changed in a way which would allow its efficient functioning. If parliament's resistance to higher electricity prices can be broken or neutralised, the power generation sector could quickly yield considerable profits. Thermal and hydroelectric power generating companies will need foreign investment, since Ukraine's power plants have to be extensively rehabilitated and modernised.



Whereas direct foreign investment in Ukraine's energy sector demands considerable efforts (and often perseverance), the sale of equipment is a relatively uncomplicated way to participate in the modernisation of the sector. The coal and the power industry in particular will need to buy western equipment to make production more efficient and improve environmental performance. The modernisation of the local gas distribution networks, too, will be conducted with the help of equipment imported from the West. Equipment for oil and gas production, however, will at first be provided by western companies working in joint ventures with Ukrainian partners.

Imports of equipment for the energy sector often get preferential treatment from Ukrainian customs authorities, such as exemption from duties, to promote the modernisation of the sector. Moreover, many contracts for the delivery of western equipment are financed by a loan from an international financial organisation. In such a case western exporters do not have to worry about the solvency of their customer. The World Bank may provide more than \$500m in loans for the energy sector under projects to be started in 1998. The EBRD may offer a further \$500m for the modernisation of the Ukrainian energy sector in 1998.

Portfolio investments in the Ukrainian energy sector began to receive attention in 1997, when shares of the national oil company Ukrneft and of the thermal power generating companies appeared on the secondary market. Altogether shares of more than 20 companies active in the Ukrainian energy sector were traded on the country's share markets in mid-1997. Since there are no special restrictions on foreign portfolio investors in Ukraine, they can participate freely in the market. The main obstacle to larger portfolio investments is the low liquidity of Ukraine's share markets. Total turnover in the first half of 1997 amounted to a mere \$100m. However, some companies are likely to show a strong performance when the recovery of the energy sector makes the desired progress.